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SOUTHERN MEDICAL ASSOCIATION
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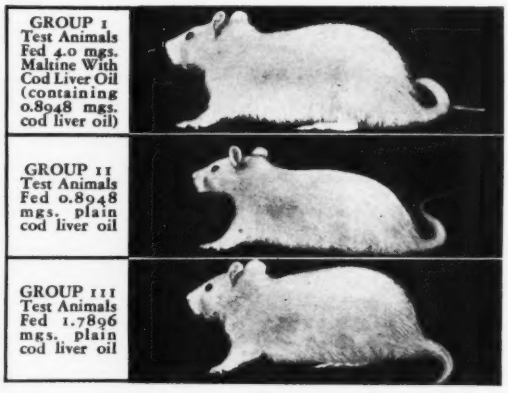

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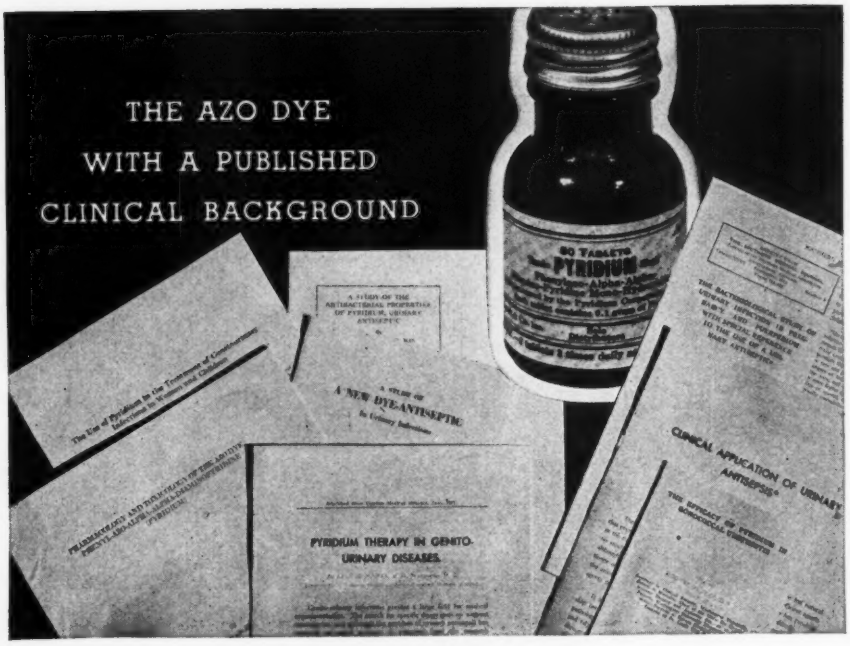

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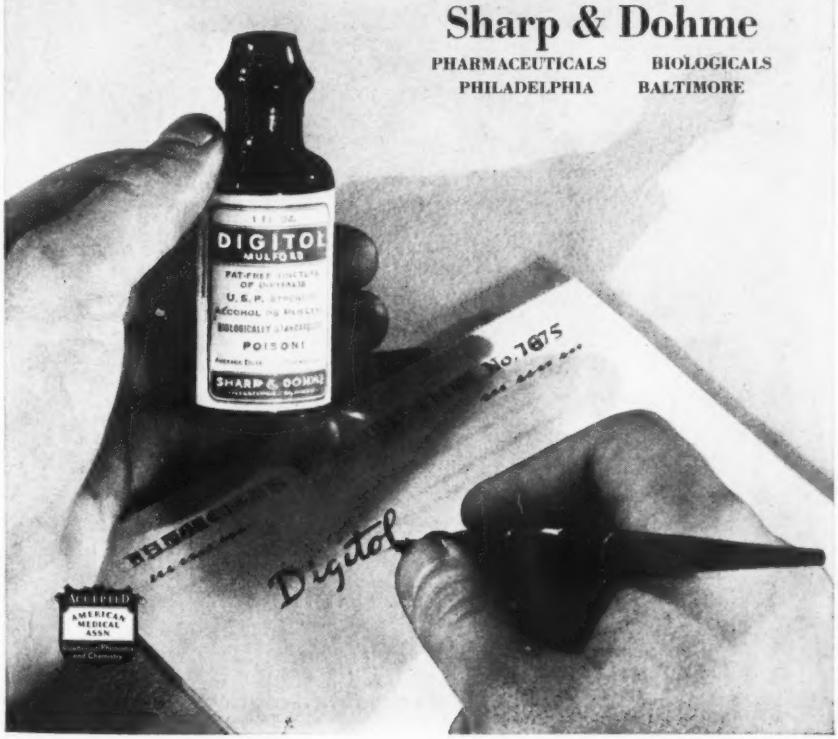

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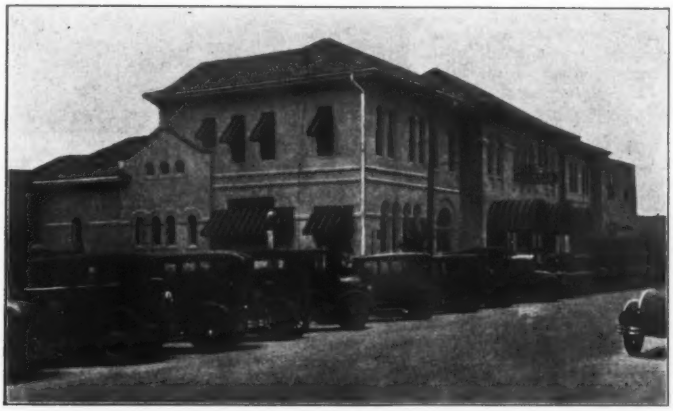

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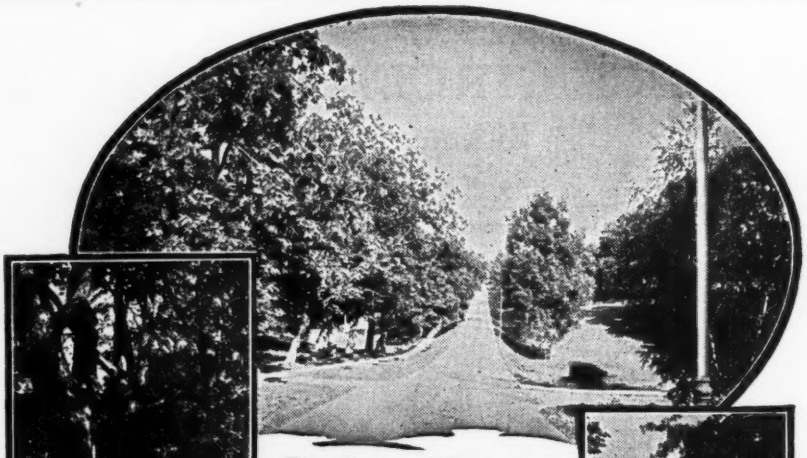

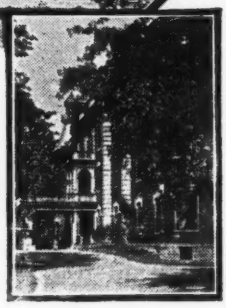

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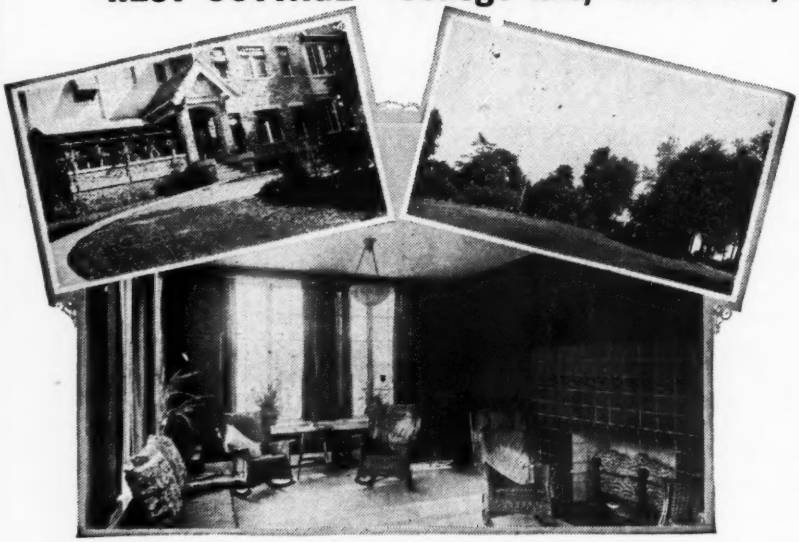

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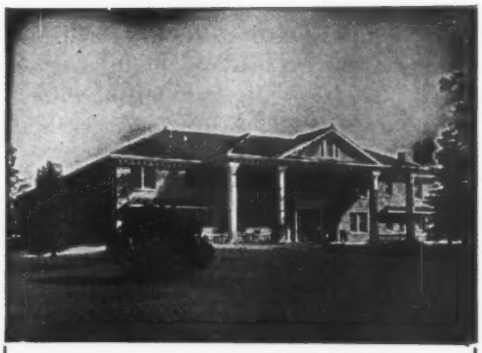

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A SEROLOGICAL SURVEY FOR SYPHILIS IN A NEGRO POPULATION*

By KENNETH F. MAXCY, M.D.,
and
WM. A. BRUMFIELD, M.D.,
Charlottesville, Virginia

Familiarity with the pathology of syphilis leads to a realization of the impossibility of an exact statement of its degree of prevalence in any population group. Postmortem examinations constantly emphasize the failure of the most painstaking clinical and serological observations to reveal the frequency of syphilitic infection of the latent or asymptomatic type. Nevertheless, long experience has demonstrated that a delicate precipitation or complement-fixation technic, such as is afforded by the Kahn and the Wassermann tests, respectively, affords a constant and reliable index of the prevalence of syphilis for comparative purposes. This study rests upon this hypothesis.

It is proposed to present in some detail the results of a serological survey of the negro population of the City of Charlottesville and County of Albemarle in Virginia. This County is one of six selected for this purpose as representative of the rural South.

REVIEW OF PREVIOUS SURVEYS

Limiting attention to the negro race in the United States and to surveys which have been based upon the Wassermann reaction, the results of several representative studies have been summarized in *Table 1.*

In the first group are observations made on adult negroes seeking treatment for medical or surgical conditions in hospitals or in private practice. *A priori* the rate of prevalence in this group would be expected to be somewhat higher than the rate among the general population, since syphilis is directly or indirectly a common cause of illness. The difference is illustrated by McNeill[1] in comparing medical admissions to the John Sealey Hospital in Galveston. Thirty-four per cent of patients admitted medically showed a positive Wassermann reaction, while the surgical accident admissions in the same Hospital showed only 24.0 per cent positive. It is also illustrated by Keidel and Moore[2] in the wards of the Johns Hopkins Hospital, where the rate among colored women admitted to the general (adult) medical wards was 20.0 per cent, while the rate for the colored women admitted to the obstetrical clinic was 16.29 per cent.

The observations recorded on obstetrical patients should correspond closely with what would be found in women of child-bearing age in the general population since syphilis *per se* does not increase admissions to this service. The figure obtained by the late Dr. Whitridge Williams[3] in his carefully studied series in Baltimore (16.3 per cent) is probably representative of negro women in east Baltimore. The experience of clinics in other cities, however, indicates that the rate may be as low as 12 per cent or as high as 30 per cent for the same population class in different localities.

In the same way, observations made on newborn infants should constitute an index of the amount of hereditary syphilis. Although there appears to be some difference of opinion as to the reliability of a Wassermann reaction done on the blood of a newborn infant, the careful study of Jeans and Cook[4] shows that this method apparently reveals about two-thirds of the actual infections. In St. Louis, they found that about 9 per cent of the colored infants born on the

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*Read in Section on Dermatology and Syphilology, Southern Medical Association, Twenty-Seventh Annual Meeting, Richmond, Virginia, November 14-17, 1933.

*From the Department of Preventive Medicine and Bacteriology and the Department of Dermatology and Syphilology, University of Virginia.

*This study was made possible by a grant from the Rosenwald Fund, administered by the United States Public Health Service. This was supplemented by contributions from the Virginia State Board of Health, the City of Charlottesville, the County of Albemarle, and the University of Virginia. The work was conducted under a cooperative agreement by the State Board of Health, the local Joint Health Department and the University of Virginia.

Table 1

SUMMARY OF REPRESENTATIVE OBSERVATIONS ON THE FREQUENCY OF POSITIVE WASSERMANN REACTIONS AMONG NEGROES IN THE UNITED STATES

Reference	Locality	Group	Number Examined	Per Cent Positive
(1)	Galveston, Texas	Hospital, medical, adult	1,200	34.0
(1)	Galveston, Texas	Hospital, surgical, adult	200	24.0
(2)	Baltimore, Maryland	Hospital, medical, adult	2,010	22.9
(6)	Atlanta, Georgia	Hospital, medical, adult	4,786	13.8
(7)	Mt. Vernon, Alabama	Hospital, insane, adult	706	26.9
(8)	Milledgeville, Georgia	Hospital, insane, adult	473	16.0
(9)	Brooklyn, New York	Private practice, medical, adult	2,000	14.8
(10)	Atlanta, Georgia	Hospital, obstetric, adult females	300	30.0
(11)	Louisville, Kentucky	Hospital, obstetric, adult females	267	22.8
(12)	New Orleans, Louisiana	Hospital, obstetric, adult females	.....	16.7
(3)	Baltimore, Maryland	Hospital, obstetric, adult females	2,161	16.3
(13)	New York, New York	Hospital, obstetric, adult females	4,500	12.0
(4)	St. Louis, Missouri	Hospital, obstetric, infants	183	9.3
(1)	Galveston, Texas	Hospital, pediatric, children	52	9.5
(6)	Atlanta, Georgia	Hospital, pediatric, children	3,856	8.0
(5)	Norfolk, Virginia	Hospital, pediatric, children	1,963	12.5
(14)	Macon County, Alabama	General population, all ages	3,884	39.8
(14)	Glynn County, Georgia	General population, all ages	7,408	26.1
(14)	Tipton County, Tennessee	General population, all ages	2,706	25.5
(14)	Bolivar County, Mississippi	General population, all ages	3,693	23.5
(14)	Pitt County, North Carolina	General population, all ages	11,931	12.5
( )	Albemarle County, Virginia	General population, all ages	4,179	9.8
(24)	Macon County, Alabama	General population, adult	2,898	27.8

maternity services, thus constituting a relatively unselected group, had a positive Wassermann.

The figures from pediatric clinics suffer from the same limitations as is evident in adult medical admissions, since infected children are more apt to seek treatment for one condition or another than are healthy, normal children. An active nursing-follow-up of syphilitic mothers will considerably influence the figure obtained. These considerations must be borne in mind in interpreting the figures of Royster[5] in Norfolk (12.5 per cent), McNeill[1] in Galveston (19.5 per cent), and Paullin, Davison and Wood[6] in Atlanta (8.0 per cent).

The figures of Parran and Usilton,[15] which have been recently published, are even more restricted for estimating prevalence, since they take into consideration only the syphilis under treatment. The proportion of negro syphilitics who are under treatment varies from about 3 per cent to more than 20 per cent in different communities and in the same community over a series of years.

In reviewing the preceding studies a considerable degree of uncertainty is felt as to the real prevalence of the disease in the negro race in the United States. To supply this lack of exact information the Rosenwald Fund recently made possible through cooperation of the United States Public Health Service with state and local health departments a series of surveys in six Southern counties, conducted in such a manner as to avoid disturbing selections as much as possible. The results of these surveys have been made available through the publications of Carley and Wenger,[16] Wenger and Ricks,[17] Wenger,[20] Gill,[18] Crabtree and Bishop,[19] and an interesting summary of the combined results by Taliaferro Clark.[14] The crude percentage of positive Wassermanns found in the whole population surveyed in each county is shown in *Table 1,* varying from a maximum of 40 per cent in Macon County, Alabama, to a minimum of 10 per cent in Albemarle County, Virginia. The low figure obtained in the last named county is explained in detail herewith.

DISCUSSION OF LOCALITY

Albemarle County is located approximately in the geographic center of Virginia. Its total population of 42,226 is divided between the City of Charlottesville (15,245) and the surrounding rural area (26,981). About one-fourth of this population is negro, of whom some 4,083 live under urban conditions in the City and 6,232 are distributed on farms throughout the County. The social, educational and economic status of this negro population is better than is found

in the plantation conditions of the far South. In Charlottesville there is a considerable nucleus who have had at least a common school education, many who own property, small tradesmen, skilled laborers, teachers, and professional classes.

Medical attention is readily available to all, except those living in the remote parts of the County. The University Hospital has, for many years, cared for colored patients and maintained a large out-patient clinic for their benefit.

METHOD

As in the other Southern counties which have been surveyed, in order to obtain a representative sample of the negro population of the City of Charlottesville and County of Albemarle, the approach was made through the schools, churches, social organizations, labor groups, press and posters. The general purposes of the survey were made known and cooperation solicited with the promise of treatment for "bad blood" for those who were in need.

Field clinics were developed in the main population centers in the County and at the City Hall, in addition to afternoon and night clinics at the University Hospital. Specimens of blood were taken from all who presented themselves for examination voluntarily. Care was taken to exclude from the survey records the results of examinations of patients at the University Hospital, jail inmates and court cases which might tend to disturb the random selection. About 2,000, or almost 50 per cent, of the observations were made on children in the City and County schools. Among adults it is impossible to say whether the clinics attracted particularly those who had reason to believe that they had a "blood disease," or whether such individuals were afraid of being found out. Probably both influences were at work and more or less balanced each other.

SEROLOGICAL TECHNIC

Early in the work the Wassermann tests were performed in the laboratories of the State Board of Health at Richmond. Later the work was done in the laboratory of the Department of Preventive Medicine and Bacteriology at the University.

In the latter laboratory, the Kolmer technic was followed, utilizing a sheep system and ice box fixation. The Kolmer (cholesterinized) antigen was adjusted to a maximum degree of sensitiveness consistent with specific fixation. The error, if any, was on the side of undersensitiveness rather than oversensitiveness. A two, three or four plus reaction was classified as "positive;" one plus or plus minus as "doubtful."

The Wassermann technic was standardized (1) by comparison of a series of split specimens with the State Board of Health and with the Clinical Laboratories at the University Hospital, (2) by comparison with the clinical histories of patients in the hospital and out-patient department, (3) by comparison with the Kahn test, (4) by repetition of positive and doubtful reactions. As a routine, effort was made to bring in for a second examination every individual whose serum was positive or suspicious on the first examination. In over 90 per cent of instances a second or confirmatory test was performed.

All cases diagnosed as syphilis on clinical, x-ray or pathological grounds, but who showed negative serum reactions, were classified as negative for the purpose of this study.

RESULTS

Crude Rate.—Sera from 4,185 individuals were examined. This number includes slightly more than 40 per cent of the negro population of the City and County according to the 1930 census. By reference to the accompanying tables it will be seen that the sexes were almost equally represented. All ages were included except that there were relatively few children under five years of age. The proportion of the population examined in the County (44 per cent) was slightly higher than in the City (33 per cent).

The total number of individuals found to have positive serologic reactions was 407, or 9.7 per cent. If to this total be added those 58 individuals whose sera showed a doubtful or suspicious reaction, then the rate would be increased to 11.1 per cent.

In general, then, it may be stated that in this area from 10 to 11 per cent of the negro population have syphilis in a sufficiently active form to give evidence of this fact in their blood serum. This figure is fairly comparable to those obtained in other Southern counties by the same methods, the results of which have been shown in *Table 1.* The percentage of positives in Albemarle County is lower than that obtained among the negro population in any of the other Southern counties surveyed.

City and County.—Because of differences in the mode of life and the availability of treatment, the results of examinations of sera from

Table 2

THE FREQUENCY OF POSITIVE SEROLOGICAL REACTIONS AMONG NEGROES IN THE CITY OF CHARLOTTESVILLE AND COUNTY OF ALBERMARLE, VIRGINIA. ROSENWALD SURVEY, 1931-32

	Male			Female			Male and Female		
	Number Examined	Number Positive	Per Cent Positive	Number Examined	Number Positive	Per Cent Positive	Number Examined	Number Positive	Per Cent Positive
City	728	104	14.2	592	72	12.2	1320	176	13.3
County	1393	103	7.4	1351	120	8.9	2744	223	8.1
City and county	2121	207	9.8	1943	192	9.9	4064	399	9.9
Unclassified	69	6		52	2		121	8	
Total	2190	213	9.7	1995	194	9.7	4185	407	9.7

the colored population in the City of Charlottesville and in the rural districts of Albemarle County were tabulated separately as shown in *Table 2*. The percentage of positives was consistently higher in each sex age group in the City as compared with the corresponding group in the County. Perhaps the best index of the difference is expressed in comparison of the rates among children up to fourteen years of age, which represents almost exclusively untreated hereditary syphilis. The rates for males and females in the City was 4.7 and 6.6, respectively, while in the County it was 2.0 and 3.3.

Evidently, then, in spite of easy access to treatment syphilis is more prevalent among the negroes living under urban than among those living under rural conditions in this area.

Sex Distribution.—In *Table 2* it will be noted that a slightly higher rate among the females than among the males in the County is exactly counterbalanced by the reverse situation among the colored population of the City. There is not very much difference either way.

In their analysis of the results of 30,090 serological examinations on rural negroes, summarizing the five other Southern counties surveyed, Wenger and Ricks[17] found the rate slightly higher among females (21 per cent) than among males (19 per cent). This is in accord with text-book statements about the negro race. On the other hand, in his analysis of 14,769 colored cases under treatment for syphilis, largely an urban group in the southeastern United States, Parran[21] noted the higher rate (10.8 per 1,000 population) among colored males (9.3). The difference might be explained as due to the greater proportion of males seeking antisyphilitic treatment. Apparently this is not the whole story because figures from the routine medical admissions to hospitals generally show a slightly higher rate among the males. Incidentally, in the white race there seems to be

Table 3

SEX AND AGE DISTRIBUTION OF POSITIVE AND DOUBTFUL SEROLOGICAL REACTIONS AMONG NEGROES IN ALBEMARLE COUNTY, VIRGINIA. ROSENWALD SURVEY, 1931-32

	Male					Female					Total				
		Positive Reaction		Doubtful Reaction			Positive Reaction		Doubtful Reaction			Positive Reaction		Doubtful Reaction	
Age Group	Number Examined	No.	Per Cent	No.	Per Cent	Number Examined	No.	Per Cent	No.	Per Cent	Number Examined	No.	Per Cent	No.	Per Cent
0- 9	346	11	3.2	3	0.9	364	16	4.4	4	1.1	710	27	3.8	7	1.0
10-14	452	11	2.4	1	0.2	511	22	4.3	4	0.8	963	33	3.4	5	0.5
15-19	289	16	5.5	6	2.1	334	28	8.4	5	1.5	623	44	7.1	11	1.6
20-24	245	29	11.8	1	0.4	143	36	25.2	5	3.5	388	65	16.8	6	1.5
25-29	177	33	18.6	4	2.4	99	25	20.0	1	1.0	276	53	19.2	5	1.9
30-34	128	29	22.6	1	0.8	114	28	24.6	2	1.8	242	57	23.5	3	1.2
35-44	185	39	21.1	2	1.1	172	20	11.6	5	2.9	357	59	16.6	7	2.0
45-54	157	20	12.7	2	1.3	117	12	10.2	1	0.9	274	32	11.7	3	1.1
55-	153	21	13.7	5	3.3	85	8	9.4	1	1.2	238	29	12.2	6	2.5
Unclassified	58	4	6.9	0	0.0	56	4	7.1	5	8.9	114	8	7.0	5	4.4
Total	2190	213	9.7	25	1.1	1995	194	9.7	33	1.7	4185	407	9.7	58	1.4

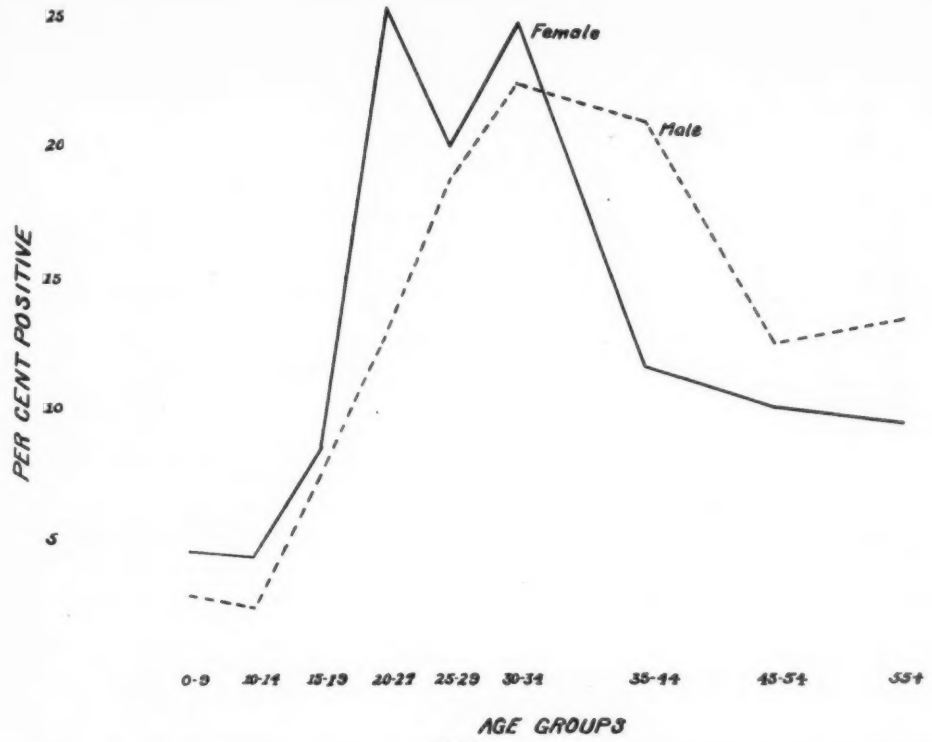

Fig. 1

Percentage of positive serological tests for syphilis in negro males and females according to age in Albemarle County, Virginia.

rather uniform agreement that the disease is decidedly more prevalent among men.

Age Distribution.—In *Table 3*, the percentage of positives has been calculated for the total number examined in each age group according to sex. The results have been graphically presented in *Fig. 1.*

Positive serum reactions due to syphilis showed a slight decrease during childhood as puberty was approached. The amount of treatment given to children in this area was found to be insufficient to account for this decrease.

Beginning at the age of puberty, the rise due to acquired infections became evident. It was more rapid among females, reaching the maximum figure of 25.2 per cent in the age group 20 to 24. Among males the maximum figure, 22.6 per cent, was not reached until 30 to 34.

The earlier acquisition of infection by negro women seems to be a constant characteristic. It is shown in the figures of the United States Public Health Service on the age at onset of syphilis among 2,227 treated patients, as given by Parran.[21] It is likewise apparent in the figures of each of the other five Southern counties surveyed, as given by Gill[18] for Macon County, Alabama, and a resurvey of the same County by Vonderlehr,[22] by Crabtree and Bishop[19] for Tipton County, Tennessee, by Wenger[20] for Pitt County, North Carolina, and by Wenger and Ricks[17] in the combined figures for five counties.

In both sexes, after having reached this maximum figure in early adult life, the percentage of positive begins to decrease. The females having reached their maximum earlier lead in this decrease, so that after the age group 30 to 34 the rate among women is constantly lower than among men. When old age is reached in both sexes the rate is about half what it was in early adult life.

A study of these relationships sheds light on the reason for the higher rate among the colored men admitted to general hospital medical wards.

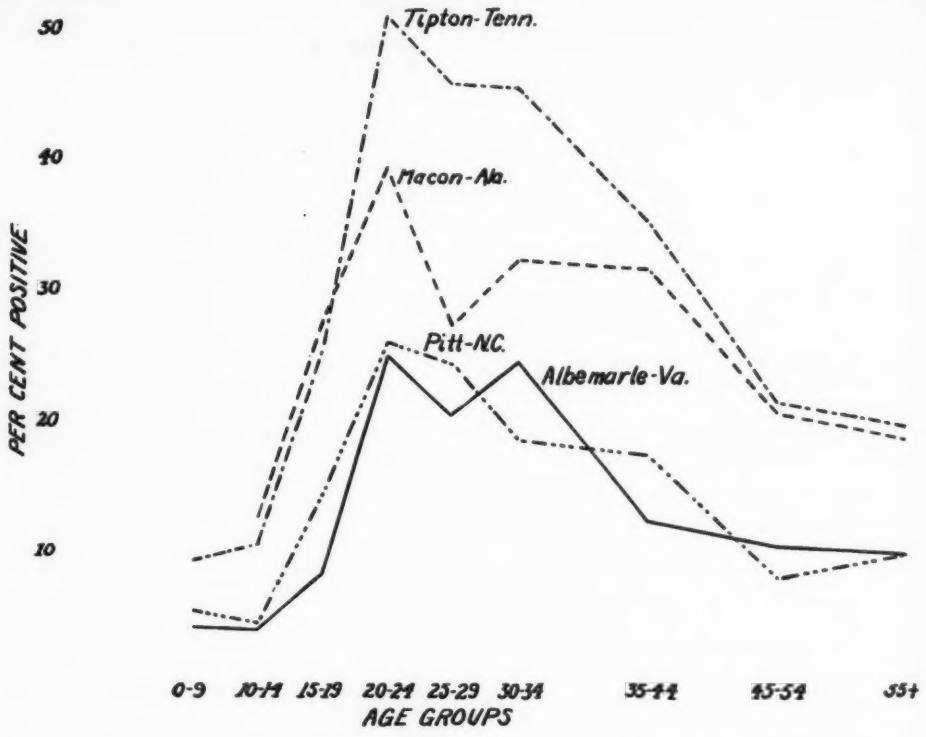

Fig. 2

Percentage of positive serological tests for syphilis among negro females according to age in four Southern counties.

The finding does not necessarily imply that men are more commonly infected than women. In the older age groups from which ward patients are chiefly recruited, the residual rate of serological positives is higher among men, though actually in young adult life it may have been higher among the women of the same community.

The decrease in the percentage of positives with advancing years was rather more abrupt and more marked than had been anticipated. The question arose as to whether this was peculiar to the area surveyed or a constant characteristic of this disease in the negro race. The data from three of the other counties surveyed was examined with this point in view. It was not available for the other two, but the combined figures given by Wenger and Ricks[17] suggest that the trend is similar for all. The comparison was made specific by restricting it to the female sex. The results have been presented graphically in *Fig. 2.**

The first point of interest in this graph is that although the crude rate for Macon County, Alabama, was higher than that for Tipton County (see *Table 1*) when the comparison is made specific for sex and age, it is found that this higher rate holds only for the younger age groups. The percentage of adults who were found to have positive reactions in this County was lower than that found in Tipton County. Pitt and Albemarle showed the lowest index of prevalence at all ages, the differences between the two being of insignificant degree.

*The Macon County figures plotted in this graph are those obtained by P. A. Surgeon R. A. Vonderlehr in his survey of this County during the winter of 1932-33. The area surveyed was not the same as that covered by Gill two years previously. The method also differed slightly. No attempt was made to secure specimens from children. Attention was confined to apparently healthy adults found at work or going about the normal tasks of life. The sera were carefully checked by both the Wassermann and the Kahn tests.

The second point of interest in this graph is the striking similarity of the age prevalence among females as indicated by serum tests. In each locality it reaches its peak in the age group 20 to 24. In each subsequent age group it is less. In old age the percentage of positives is about one-half what it was in young adult life. This phenomenon appeared to be common to all the areas surveyed.

There is no reason to believe that the relatively high incidence in the age group 20 to 24 is a new experience, due to recent epidemic spread of the disease. It corresponds to the well-known fact that from 15 to 24 is the age of greatest sexual promiscuity and consequently the age of greatest exposure to infection. Beyond this age with a tendency toward monogamous family relationships, newly acquired infections decrease (Parran,[21] Haustein[22]). It would be expected, nevertheless, that the percentage of females with positive sera would continue to rise from the cumulative effect, though at a diminishing rate. On the contrary, a decrease is apparent in each succeeding age group after 20 to 24. Evidently a considerable proportion of serological positives remain so for only a few years and this disappearance of positives more than counterbalances the increase due to newly acquired infections. When old age is reached, apparently more than 50 per cent of the women who were serologically positive in young adult life have become negative.

Previous Treatment.—This explanation immediately suggests that a considerable proportion of those infected have been treated to a reversal of the reaction. The question of treatment in these population groups was therefore carefully examined.

In Albemarle County, Virginia, an active outpatient clinic for the treatment of syphilis had been maintained since 1920. So far as possible these facilities were made available to the colored population irrespective of their ability to pay, with the interests of the community kept in mind. This, of course, was in addition to the efforts of the local medical profession to provide properly for such patients as sought private advice. Analysis of survey records showed that information concerning previous treatment was recorded for 245 of the 407 persons found positive. This information has been briefly tabulated in *Table 4*. Of these 245 who presented themselves for medical advice subsequent to their notification of positive blood findings, only 37, or 15 per cent, gave a history of ever before having had antisyphilitic treatment. On the whole there was little difference between the sexes in this matter. The City colored were slightly better off than the rural. The untreated group was made up largely of children and old people. Among young adult females in the age group 20 to 39, 29 per cent, or nearly one-third, had received some treatment. The amount of treatment, however, was small. It seldom amounted to more than a single course of arsenicals with a little mercury and potassium iodide in addition. Granting that one-third had received the equivalent of 8 doses of arsphenamine, according to the experience of Moore and Keidel[23] 10 per cent of these, or 3 per cent of the total number, were cured by treatment.

In Pitt County, an active clinic for the treatment of syphilis had been maintained in the county court house by two private physicians for nine years preceding the survey. During this time some 1,177 colored patients, or an average of about 131 per year, had been given some treatment. Since the total colored population of the County was 24,400 and approximately 11 per cent, or 2,684, were serologically positive at any one time, the proportion who had received treatment is not great. Moreover, of those treated, 59 per cent had received not more than five doses, and 93 per cent not more than ten

Table 4

HISTORY OF PREVIOUS TREATMENT OBTAINED FROM 245 PATIENTS WITH POSITIVE SERA FOUND BY THE SURVEY

	Male			Female			Male and Female		
	Untreated Number	Treated		Untreated Number	Treated		Untreated Number	Treated	
		No.	Per Cent		No.	Per Cent		No.	Per Cent
City	51	7	12	34	11	24	85	18	17
County	60	11	15	63	8	11	123	19	13
Total	111	18	14	97	19	16	208	37	15

doses of arsphenamine. In Tipton County, 13.9 per cent of 526 patients found by the survey gave a history of having had some previous treatment. With few exceptions, however, this had consisted of a few doses of neoarsphenamine and a little mixed treatment. Gill states that only 33 out of 1,203 serological positives on the original survey of the southwest corner of Macon County gave a history of having had some treatment. In a later survey of other parts of Macon County not touched by the first, Vonderlehr found only 151 out of 2,299 males questioned who admitted having had a "needle treatment" for syphilis.

From this information and general knowledge of the inadequacy of antisyphilitic treatment among the negroes living in these areas, it is evident that the figures obtained in these surveys represent to a large degree untreated syphilis. The amount of treatment given in Pitt and Albemarle Counties may have been sufficient to affect materially the transmission rate through rendering many fresh cases non-infectious, but it does not appear to have been sufficient according to current conceptions to have affected materially the serum reactions of the populations concerned. Only a small fraction of disappearance of positives with advancing years could be attributed to specific medication.

DISCUSSION

Having disposed of treatment as a relatively unimportant cause of the abrupt and steady decrease in the percentage of women with positive reactions after early adult life among the colored race in these southern counties, the explanation is sought in the natural course of the disease. An excess of deaths, with syphilis as the direct or indirect cause, accounts for an uncertain, but probably small, fraction of the disappearing positives. Another small fraction can be attributed to removal from the general population by incapacitating involvement of the nervous system, the cardiovascular system, or other illness. The principal cause, however, is undoubtedly the well-known tendency of this disease to become asymptomatic and sero-negative in the late stages, even in untreated cases.

Among others, Bruusgaard[25] has recently emphasized the capacity of the body to overcome this infection partially or wholly through the operation of its own specific immune mechanism. He followed up a large number of patients who had been seen in the Dermatologic-University Clinic of Oslo from 1885 to 1910 with the florid manifestation of early syphilis and allowed to go untreated. Among those whom he was able to trace who were still living he found that of 79 infected three to ten years previously 24 per cent had become asymptomatic and seronegative; of 66 infected ten to twenty years previously, 36 per cent; of 100 infected twenty to thirty years previously, 54 per cent; and of 64 infected thirty to forty years previously, 55 per cent. Some of these undoubtedly still harbored a more or less active infection. Some had suffered irreparable damage from an old infection, which was not yet apparent clinically. Some, and a not inconsiderable number, as pathological studies showed, had apparently recovered from the disease.

The age distribution of serological positives can therefore be explained adequately by what is already known of the natural course of syphilis. At the same time the graphic presentation of these facts in an age curve such as is here presented serves to emphasize three points which are sometimes overlooked, namely: (1) even in the untreated syphilis of young adults a considerable number of patients become seronegative in a relatively short period of time. Proper allowance for this fact by comparisons with an untreated control group has not always been made in studies dealing with efficacy of various methods of treatment. (2) There is perhaps a tendency to underrate the importance of the natural defense mechanism of the host in ultimate recovery, although this concept was undoubtedly over-emphasized by Cæsar Boeck and his students at Oslo. (3) There is perhaps also a tendency to expect too much of the serum reaction in the older age groups. After fifty years of age only about one-half of those infected in early adult life still give evidence of this fact in their serum.

The surveys here reviewed have served to emphasize the fact that the prevalence of syphilis is not uniform in the negro race in the United States. It varies within wide limits in different geographical areas. Comparisons of the incidence of the disease in clinic and hospital admissions in various parts of the country are of little value unless it can be shown that the groups are alike at least as regards the conditions governing admission and their age and sex composition. When the technic of selection is similar and the resulting figures are specific for age and sex, the statement may be made with great assurance that wide variations of prevalence do exist in different communities. In such localities as are represented by Tipton County, Tennessee, and Macon County, Ala-

bama, taking into consideration the high percentage of positives among young adult females (40 to 50 per cent), and making allowances for subsequent disappearance of positive reactions in some of the infected, it would seem that a majority of the population must be exposed at some time during life. On the other hand, in such counties as Pitt, North Carolina, and Albemarle, Virginia, where only about 25 per cent of the young females acquire positive serum reactions, a majority of the negro population may escape infection.

The very existence of such differences suggests that the rate can be considerably lowered with the means already at our disposal.

It goes beyond the purposes of this paper to discuss the various factors which tend to lower the rate. Sufficient to say here that the value of treatment of early cases as a control measure has by no means been thoroughly explored. Although treatment seemed entirely inadequate in Pitt and Albemarle Counties from the point of view of materially affecting the sera of the group, it may have been of greater importance than at first appears in reducing transmission of the disease through rendering many early cases non-infectious. To reduce prevalence it is not necessary to reduce promiscuity, but to reduce infective promiscuity.

Incidentally, the serological survey supplies a practical and effective approach to a serious attempt to lower the incidence of the disease in any locality. During the course of this survey in Albemarle County, for example, of the 407 serological positives discovered, 245, or 60 per cent, subsequently presented themselves at the clinics. These patients were carefully examined for clinical evidence of activity. In addition to the finding of symptoms indicating activity in some of the old infections, four patients were picked up who were in the early stages and had florid manifestations of the disease. Sufficient treatment was given to render all of these patients non-infectious.

Such a survey is, however, only a beginning. It must be followed up by a sustained, well-organized and continuous effort over a period of years if a permanent reduction in the prevalence of syphilis is to be brought about.

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DISCUSSION (*Abstract*)

Dr. Hugh J. Morgan, Nashville, Tenn.—This paper represents another careful piece of work in an organized attempt to acquire information concerning the prevalence of syphilis in the colored race in the South. The methods employed were carefully standardized and controlled and the results unquestionably afford an index of the prevalence of syphilis in the various communities surveyed. That the serological survey does not disclose every case of syphilis present in the group examined is well recognized. It does, however, afford a constant and reliable index of the prevalence of the disease, and with our knowledge of the incidence of seronegative syphilis we can at least roughly approximate the actual number of cases in a given community.

It is interesting that in the surveys made in Alabama, Georgia, Tennessee and Mississippi the prevalence rate was over twice as high as that reported in the present study for Albemarle County, Virginia. Pitt County, North Carolina, also has a relatively low rate as compared with these central Southern states. While rather impressive, these facts are not surprising when one remembers that one is dealing with an infectious disease. It seems no more reasonable to assume that the prevalence of syphilis in the colored race is everywhere constant, regardless of environmental factors,

than it would be to assume that it is everywhere constant in the white race. Unquestionably the social and economic status of the negro in Albemarle County is superior to that of the negroes living in remote localities and medical care is more readily available. Perhaps the low prevalence rate in this County is a direct reflection of the standards of medical practice here and of the presence of the University Clinic with its Out-Patient Department.

I was particularly interested in that part of the discussion which emphasized the fact that in a certain proportion of individuals infected with syphilis and untreated, the disease may become entirely quiescent. As in tuberculosis the forces of resistance to syphilis are frequently adequate and a relatively small proportion of individuals infected actually develop the late and hazardous sequelae. Drs. Blitch, Hillstrom and I studied this question with relation to syphilitic heart disease. We found that among 37 adult males with chronic syphilis, dying in the Vanderbilt University Hospital of conditions other than syphilitic heart disease, there were only 6 incidences of aortitis (12 per cent). This seems to indicate that among individuals infected with syphilis only a relatively small percentage will develop serious syphilitic cardiovascular disease. While this would seem to be perfectly obvious when one considers the tremendous prevalence of syphilis with the estimated annual attack rate of 7.3 per thousand and the estimated annual number of cases diagnosed as 870,000, it seems necessary to emphasize it as it is apparently in frank disagreement with the opinions of Langer and with Moore, Danglade and Reisinger, who have recently stated that necropsy evidence indicates the presence of syphilitic aortitis in 80 to 90 per cent of individuals with late syphilis.

Drs. Maxcy and Brumfield indicate that the incidence of syphilis can be lowered in any community, and with the means already at our disposal. The most effective method of attack on the syphilis problem is unquestionably the prompt and adequate treatment of the acute disease. As I see it, the syphilis problem from the standpoint of public health, is the problem of the treatment of acute syphilis.

Dr. Albert Keidel, Baltimore, Md.—For a number of years the estimated incidence of syphilis in the general population in the United States has been generally regarded as approximately 10 per cent. For negroes as a group, the percentage has always been higher. It has also been recognized that the incidence in one locality may differ from that in another locality and may differ in the same locality from time to time. All surveys in the general population are handicapped by an involuntary element of selection due to the reluctance of syphilitic individuals in the territory to have their secret exposed. For these and other reasons unnecessary to mention in detail, it is almost impossible to attain anything more than an approximate numerical estimate of the incidence of syphilis in communities and in the population at large.

It must also be said of serologic surveys that discrepancies due to lack of uniformity in the technical laboratory procedures and in evaluation of the end-results constitute an element of uncertainty which it is difficult, if not impossible, at present to overcome. Due to this circumstance one feels, involuntarily, a hesitation in accepting survey results at their face value when attempting comparative studies of the incidence of syphilis in the whole population.

Everybody will agree with the statement that surveys in hospital wards and clinics should uncover higher percentages of positive Wassermann than those obtained by surveys of the general population, and that obstetrical services on the contrary should about reflect the incidence in the general population for the reason stated by the essayists.

Looking at *Table 1*, which is more in the nature of an exhibit than an integral part of the present study, one sees that in Atlanta, Georgia, 4,786 hospitalized medical adults had a positive Wassermann index of 13.8 per cent, and among 300 hospitalized obstetrical patients the index was 30 per cent. Not knowing the details of the latter study, I wonder why these expectant mothers should be so much more heavily syphilized than not only medical hospital patients, but also the general population, in Glynn County, Georgia.

A comparison of percentages throughout *Chart 1* leaves me wholly unconvinced as to the freedom of these surveys from gross errors. I find it very difficult to accept these statistics at their offered value.

The survey under discussion appears to have been carried out with a full realization of such pitfalls, and with a determination to avoid them as far as possible. Yet it seems to me that their final combined incidence percentage is surprisingly low for this negro population, especially when viewed in comparison with the results of similar surveys as a whole, as illustrated in *Table 1*. It is also surprising to find in *Table 2* that the incidence rate is identical for colored men and women. Various studies point to the markedly greater tendency to latency in females. In Turner's figures, latency occurs in 66 per cent of colored females to 41 per cent of colored males in the Hopkins Syphilis Clinic. For various probable reasons, syphilis runs a more benign course in women than in men. They have fewer secondary relapses and a markedly lower incidence rate for cardiovascular and central nervous system disease.

In *Table 3* the marked spread in incidence of positive tests in women in the 20 to 24 and 15 to 19 age groups is not surprising in itself, as it conforms to the "age at the time of infection" observations. It does, however, appear somewhat later than one would expect, since the peak, in the "age at time of infection" statistics coincides with the seventeenth year for colored females and the twenty-first year for colored males, as shown by Zimmermann.

I find myself in sharp disagreement with the writers on two points, namely: I do not believe in the superiority of postmortem studies over serologic examinations in the detection of syphilis of the asymptomatic or latent type; and I do not believe that the solid South is the United States, as one is led to believe by a perusal of the legend at the bottom of the first chart.

Dr. Maxcy (closing).—There has naturally been a certain scepticism among syphilologists regarding the accuracy of estimates of the frequency of syphilis. The differences in the findings of various authors shown in *Table 1* have been interpreted by some as due largely to differences in the sensitiveness of the serological technic employed. Undoubtedly this is variable within certain limits, and yet I believe that the error from this source is inconsiderable in comparison with the errors made by failure to appreciate differences in composition of the groups selected for study. It is pointed out, for example, that one author finds the

rate in the colored obstetrical wards in Atlanta to be 30 per cent, while another author finds the rate among adult medical patients in the same city and even in the same hospital to be 14 per cent. By referring to the age distribution curve of positive Wassermann tests given above, it will be seen that this difference is very largely, if not entirely, explained by the fact that in the obstetrical wards are young adult females, while the patients in the medical wards are largely recruited from the older age groups many of whom, though infected in early life, have become serologically negative.

In the same manner to say that the rate of 10 per cent in Albemarle County, Virginia, is low compared with rates found elsewhere, means nothing unless the group with which the comparison is made is at least similar as regards age composition. It is obviously fallacious to compare the rate in a general population group more than half of which is made up of school children with the rate found among young adult females on an obstetrical service or adults seeking admission to a hospital because of organic diseases, chief among which is syphilis itself.

Information obtained from surveys of large population groups by the Wassermann reaction or other serological technic are not entirely free from errors of selection nor of method, but at least they give a better balanced representation of the whole situation than do the figures obtained from selected groups in clinic experience. A better basis is afforded for determining the differences in prevalence of this disease in different parts of the country, which have now been clearly shown to exist. The generalization that about 10 per cent of the negroes in the United States have syphilis is of no value if one is interested in knowing what the prevalence of the disease really is in a given locality, in various age, sex, social and economic groups.

BRUCELLIASIS: GENERAL CONSIDERATION*

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There is a growing tendency to implicate the animal as a responsible factor in the perpetuation of quite a number of maladies common to the human species. In relatively recent years, it has been observed that both man and beast have in common another infection, which at present is poorly understood. In order to avert confusion and as an aid in the establishment of uniformity of nomenclature, the generic name Brucella, as suggested by Meyer,[1] has been applied to a family of closely allied organisms responsible for a group of related diseases coming under the general name of "brucelliasis." As generally understood, this classification includes:

(1) Malta fever as originally described by Bruce, found in man and caused by *B. melitensis*, the caprine strain of Brucella; and undulant fever in man, caused by either the bovine or porcine strain of *Br. abortus*.

(2) Infectious abortion of cattle, usually caused by the bovine strain of *Br. abortus*. Cotton[2] has also isolated the porcine strain from the udder of cows.

(3) Brucella infection of swine caused by the porcine strain of *Br. abortus*, and

(4) Brucella infection of goats, caused by *Br. melitensis*.

In 1887,[3] Bruce announced the discovery of the etiological agent responsible for a protracted febrile illness common among the inhabitants of Malta. Goat breeding was quite an industry among these people and upon milk from these animals was placed the conclusive responsibility of disseminating Malta fever. The organism as first described by Bruce will be referred to in this paper as *Br. melitensis*. Ten years later Prof. Bang,[4] of Denmark, announced the isolation of an organism from the uterine contents of a prematurely aborted heifer and demonstrated it to be the causative agent of infectious abortion among cattle. In the parlance of veterinarians this condition is known as Bang's disease and the organism, occasionally called *Br. bovis*, may at this time be conveniently called *Br. abortus*, bovine variety. Eighteen years subsequent to the notable discovery made by Bruce, Craig[5] recognized and described the first case of Malta fever in this country. In 1914, about seventeen years after Bang described the cause of contagious abortion among cattle, Traum[6] of this country recognized a similar affection among swine, designated often as *Br. suis*, but for the sake of simplicity, is spoken of in this paper as *Br. abortus*, porcine variety.

Inasmuch as the etiological agent responsible for Malta fever was many years previously attributed to the human ingestion of milk drawn from infected goats, the analogy that milk consumed from cattle infected with *Br. abortus* might similarly possess pathogenicity to man was to Alice Evans[7] a quite logical inference. In 1918, she was able to announce a close resemblance of *Br. melitensis* to *Br. abortus*.

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They were, she stated, indistinguishable, using ordinary laboratory methods, including the agglutination test. In 1924[8] she suggested cattle as a possible source of undulant fever in man. Shortly thereafter, during the same year, Keefer[9] discovered our first case of human infection and organisms grown from blood cultures were identified by Evans as *Br. abortus*. Two years later, Carpenter reported similar findings and in 1927 presented a study of 10 human cases, thus providing confirmatory evidence of the infectivity of *Br. abortus to man*. Both he and Evans did a great deal of investigative work and with these micro-organisms thus isolated were able repeatedly to infect and reproduce the disease among cattle.

With this sequence of historical disclosures, we have not been until recently ready to place responsibility for the perpetuation of brucelliasis in man, and in the so doing are perfectly willing to implicate both cattle and swine. There are those who believe the evidence to be only strongly circumstantial, yet most of us are persuaded to abandon suggestions of doubt as to etiology, though we would choose to be reluctant in drawing conclusions based on inadequate observations and experimental data. There are, obviously, many problems yet unsolved, and a great many still in controversy. One must immediately apprehend, however, that a great deal has been accomplished, for it was less than a decade ago that Evans placed for the first time suspicion on the bovine species.

It is quite true that morbidity statistics are not very impressive and that the mortality rate from undulant fever is extremely low. If it were possible to determine with accuracy the actual number of cases of this fever, it is our impression that the relative morbidity rate would be high. The incidence, of course, is not that of typhoid fever, yet if routine agglutination tests were made on all specimens forwarded state laboratories, as was demonstrated by Hardy,[10] one would be astounded at the relatively high incidence of positive agglutination tests. It was concluded by him to be a public health hazard in the State of Iowa nearly equal to that of typhoid. Similar, though widely scattered, investigations made by others are not in accord with his findings. The geographic distribution of the disease will show variations due to differences in habits and occupations of people. In 1925, according to Hasseltine,[11] only twenty-four cases were reported in this country and prior to 1925 a total of 128 were reported. In 1929 every state in the Union presented positive evidence of the disease. Human cases of Brucella infection are widely distributed throughout this country and are discovered whenever and wherever a search is made. From present indications the number of cases that will be reported during the current year will approximate two thousand. In this group undoubtedly will be included cases incorrectly diagnosed, though this can be offset by an even greater number of cases either undiagnosed, incorrectly diagnosed or mistaken for other clinically similar conditions. It is obvious that its recognition is progressing more rapidly as more physicians develop a keener sense of diagnostic acuity.

According to most investigators, human cases of *Br. abortus* infection occur far more frequently in rural sections and from such studies the proprtion of men infected is far greater than women. This manifestly leads one to believe that direct contact with infected animals is contributing its part in the perpetuation of the disease. In urban sections where contact with animals can in the main be eliminated and where a great number of the people are heavy drinkers of milk the disease is, as one would expect, equally distributed among the sexes. Huddleson[12] and others have made an intensive study of persons who for occupational reasons come in frequent contact with animals. In this group are animal husbandmen, veterinarians, butchers, employes of meat packing establishments, and so on. That contact is an important factor in the spread of Brucella infection in man is substantiated by their findings. The blood sera taken from many of these persons showed the presence of agglutinins. Upon studying their histories it was frequently discovered that among this group several typical cases of undulant fever had been experienced, although the majority, in the absence of known illness, developed insidiously an active immunity appropriately attributed to frequent direct contact with diseased animals or carcasses. There is thus confirmatory proof that contact is an important factor in its spread, the significance of which must be respected. Huddleson also observed frequently a characteristic dermatitis affecting the hands and arms of veterinarians giving histories of removing placentae from animals affected with *Br. abortus*. It has been repeatedly demonstrated that *Br. abortus* organisms can penetrate the abraded or unabraded skin of guinea pigs and cattle. Human cases appear with greatest frequency during adoles-

cence and in young adulthood. The disease apparently is extremely rare among infants and children, thus providing a discrepancy poorly understood, since they constitute the heaviest milk drinkers. *Br. abortus* infection is also relatively rare in calves, even though their progenitors be heavily affected. Shortly after weaning, calves rapidly become negative to all diagnostic tests. The solution to this phenomenon, when understood, may similarly apply to its infrequency among young humans. Contrary to general belief, the reported infrequency of Brucella disease among infants and children may be more apparent than real. Various gastro-intestinal and febrile manifestations are far too common among these groups and indeed are so commonplace as to attract but meager attention. At times, when illness is alarming, a physician may be summoned, but even then only seldom does he collect blood or other specimens for laboratory examination. Our contention is that surely more cases will be discovered as we give more time to routine examinations.

For many years before Brucella-infected livestock was considered a serious factor affecting human health, veterinarians and others interested in livestock industry had given much of their thought and attention to this enormous economical problem. Many field studies had been made and it has for a long time been generally accepted to be the greatest plague affecting the animal industry. According to Cotton,[13] of the Department of Agriculture, there are 65,122,000 cattle in the United States, and of this group there are approximately 25,000,000 classed as dairy herds. No systematic blanket survey has been made to ascertain the actual incidence of infectious abortion in cattle, but from fragmentary evidence obtained through many blood tests of herds in various sections of the country, it is concluded that the disease is enzootic in all localities. The malady is of relatively minor importance among beef type cattle, but among dairy herds the reverse is true and in one state 90 per cent were estimated as infected. In older dairy sections the incidence may be 50 per cent or less, the discrepancy being attributed to the acquisition of immunity which the species develops from long continued exposure. The percentage of reacting animals in infected herds varies greatly but may average 20 per cent or more.

It has been estimated that the cost of tolerating Bang's disease among cattle is $50,000,000.00 per year. This immense loss is attributed to several important factors, such as the premature dropping of calves by infected heifers and cows, the decreased milk productivity of which shortening the period of gestation is directly responsible, also the necessity of frequently eliminating either by slaughter, isolation or otherwise, animals classified as carriers. It would be false economy to dispose of all animals designated as reactors, since many of them may be entirely innocuous. The blood of such animals may continue to demonstrate some antibody reaction long after the disease has been overcome. Appropriate tests must be performed to confirm innocence. Incidentally it may be suggested that dairy herds contaminated by *Br. abortus* frequently develop a high degree of tolerance to the disease. It is typical,[14] though not constant, for an infected heifer to abort during her first pregnancy at about half term. The succeeding service may or may not be successful, but eventually if there be no attended sterility, pregnancy will ensue and her period is prolonged though she again aborts. Succeeding pregnancies are progressively lengthened and eventually birth is given at term to a weakling. If she has not become sterile by this time, making succeeding pregnancies impossible, she will more than likely be a good producer from henceforth. Such an experience is most desirable and certainly to the financial advantage of the dairyman, unless the animal becomes a menace, as often happens, by being a long-time carrier of infection. According to Cotton,[15] the percentage of calf crop lost through infectious abortion varies among different herds and at times in the same herd. It may be as little as 5 or 6 per cent in herds long infected and in which immunity has become established, or as much as 75 per cent or more in recently infected herds in which the disease is active. Most cows abort but once though they may abort several times. It has been stated, though I doubt that the author desires that the remark be repeated, that an infected heifer must abort once in order to gain enough resistance to carry her safely through succeeding pregnancies. The milk from *Br. abortus* infected dairy herds in a great number of instances is teeming with organisms. Their presence may be determined by special cultural methods, though occasionally when only a few organisms are present the guinea pig must be used as a diagnostic martyr. Agglutinins also appear in the milk of many of these animals. A practical test, however, and one routinely performed by competent veterinarians is either

the slow or rapid agglutination of blood sera using, of course, a relatively fresh specimen and an antigen frequently replenished to insure potency. Probably the greatest menace in the perpetuation of the disease among dairy stock occurs during parturition, at which time the uterine discharge is laden with organisms. Soon, however, they disappear from the uterus, but may remain in the udder for months, and occasionally for years. These micro-organisms among the bovine species have a predilection for the sexual organs and mammary glands. It is a conjecture that the disease may in some way be associated with the development of sexual maturity in heifers and maybe in humans. Among bulls, the organisms are found in the reproductive apparatus, thus, though doubted by some, the bull may serve as a fertile vector in propagating the disease.

Swine, as was pointed out by Traum in 1905, may become infected with *Br. abortus*. The strain affecting these animals, according to many investigators, is far more virulent to man and laboratory animals than the bovine strain of *Br. abortus*. Fortunately, however, the frequency of infection is far less than among cattle. The number of swine,[16] including pigs, in the United States is estimated as 60,716,000. Any idea as to the percentage of this group infected would be a mere guess. Various estimates of from less than 1 to 4 per cent have been presented from several sections. The disease is apparently more common in the grain raising states of the Middle West and in the extreme West than in the South and East. Even though at present, apparently infrequent in swine, it may be remotely possible that the disease is only beginning to adapt itself to these animals. Field studies suggest that swine are far more resistant to *Br. abortus* than cattle. Carpenter[17] believes that the porcine strain is a variant of the bovine strain that developed a marked virulence in cattle and therefore became able to infect swine. Such an assumption would tend neither to exonerate cattle nor to minimize the importance of swine as menaces to public health. He is of the impression that swine obtain their infection from cattle, since the relative frequency of the disease is far less common among the former than the latter and then, too, the disease was described in cattle many years before it was observed in swine. It has also been claimed that *Br. abortus* infection among swine is a self-limiting disease and will, if the source of infection is removed, disappear in a short time. This epizoological study emphasizes the desirability of preventing the mingling of these two species. It can be argued that since swine may be infected with this disease oftentimes without presenting objective signs, its first recognition was considerably delayed. It has been repeatedly observed by veterinarians that swine may harbor massive infections and only occasionally abort. Economically the disease is far more serious in this respect in cattle than in swine, though sterility may possibly be more frequent among the latter. Despite any suggestion to the contrary, it has been definitely concluded that these animals are a potential menace to public health and eventually an even greater responsibility may be shifted to the porcine species. The relatively high incidence of human Brucella disease among those whose occupational activities necessitate frequent contact with infected hogs would tend to proclaim their guilt. Theobald Smith,[18] in speaking before a group of veterinarians in Little Rock several years ago, stated that blood specimens collected from human cases and forwarded to his laboratory from various sections of the country, upon examination were found to be of the porcine strain, although some of these cases did come from cows' milk. His work would tend to place greater emphasis on the swine species as a factor involving human health. Rapidly drawn conclusions, he believes, based on only a limited series of examinations, may ultimately lead to false assumptions. We will advance much more rapidly in our epidemiological studies if and when all laboratories attempt to specify routinely whether a given positive blood specimen is of the caprine, bovine or porcine race, a procedure at present seldom undertaken. There are those,[19] however, who believe there is no clear-cut reliable way of distinguishing between strains. Others are of the impression that we are really dealing with one and the same organism, which, subsequent to host adaptation, or because of other influences as yet poorly understood, has become attenuated or so altered as to present variable though recognizable petty differences when subjected to highly technical laboratory methods. Giordana,[20] of Indiana, has entirely different views. He believes that there is a great deal of difference between *Br. melitensis* and *Br. abortus*. The former, he states, produces an entirely different clinical picture than *Br. abortus* in that the time duration varies from months to years, while in *Br. abortus* it is short. In the *melitensis* infection

the recurrences are the rule rather than the exception and the opposite is true of *abortus*.

Brucella melitensis infection in goats does not seem to be a serious problem in this country except possibly in the Southwest. The actual extent that this strain plays in human cases occurring in the United States is not known. Other domestic animals are susceptible to Brucella infection, though the sanitary significance is believed negligible with the exception possibly of horses. Several investigators have been able to recover Brucella organisms from lesions on the poll-evils and withers of these animals. Members of the equine family cannot yet be absolved, though it is not believed they will prove to be menacing.

Upon studying this perplexing and poorly understood peril involving man and animal, one is embraced by an array of problems yet unsolved. To reconcile the rarity of the disease with the millions in this country who are exposed daily through drinking infected raw milk, is difficult to explain. Obviously, mysterious factors are involved which we hope will eventually be defined. Many ideas have been presented: first, that *Br. abortus*, bovine variety, is of extremely low infectivity and possibly nonpathogenic to man. Morales-Otero[21] was unable to cause the disease in human subjects after feeding them strains of bovine origin. He was able to produce the disease both by the skin and gastro-intestinal route when porcine strains were used. Second, a massive infection must be necessary to produce the disease; third, the level of natural immunity must be very high; fourth, aberrant strains of *Br. abortus* may be responsible for positive cases; fifth, lowered individual resistance predisposes to the disease; sixth, constant exposure from infancy to adulthood may stimulate protective antibody formation; seventh, the less frequently met, though relatively more potent, porcine strain, may be responsible; eighth, that mixed milk of infected and non-infected cows is so diluted as to pass beyond the point of disease producing; ninth, that certain individuals for complex biological reasons are highly susceptible to Brucella infection; and tenth, that milk from dairy herds with a long line history of infection may be harmless as compared with milk from animals more recently infected. We are also much interested in the possibility that human infection may follow the consumption of flesh from cattle or swine affected with infectious abortion. It must be true that this meat is being sold daily over the counters of many markets. Cotton[22] states that so far as is known the consumption of such meat has no significance for public health, that is, when slaughtered under Federal inspection.

As one would expect, much time and thought is being devoted to the control of brucelliasis. The elimination of the disease from livestock would account for an enormous financial saving to that industry and not incidentally its significance as a factor affecting human health would be solved. To advocate radical measures would defeat the very purpose of the undertaking. We must be content with evolutionary rather than revolutionary methods. It is indeed possible, though often not feasible, to rid a herd of cattle or swine of Brucella infection. This may be accomplished by the practice of well defined, though often expensive, methods known to many livestock breeders and all competent and reputable veterinarians. Approximately 40 states have laws or regulations restricting the interstate traffic of infected cattle intended for dairy or breeding purposes. Several states are assisting stock owners to free their herds from the disease under the accredited herd plan. To render herds abortus free is comparatively simple; to maintain clean herds is often very difficult, though not impossible. Observing a clean herd which gradually becomes contaminated is a not infrequent occurrence most baffling to veterinarians. In the hands of the unscrupulous or inadequately trained the cost of controlling contagious abortion among livestock is prohibitive, yet if control is skillfully managed, it is financially profitable to maintain abortion-free herds. Because of expensive practices attended with ordinary control methods, impetus has been given further research studies with the hope of substituting less expensive methods. Certain biological products containing either living or destroyed Brucella organisms are being used with hopes of developing active immunity in susceptible animals. Avirulent strains[23] of abortus organisms are being used, though their virtue at this moment is undetermined, and their promiscuous and indiscriminate use is fraught with danger. It is possible, unless cultures are controlled, either to produce the disease or to cause "reactors" in non-infective animals. Further studies in which living organisms are

used should be encouraged, though this work should be confined to experimental stations until pronounced safe. There are strong advocates on both sides and the conservative veterinarian must continue to experiment and observe. The control of the disease in all of its manifestations will be easily visualized when the discovery of such a specific biological agent is announced.

Of greatest importance is the human control of this incapacitating and protracted malady. We can ill afford to stand idly by awaiting the slow extermination of the disease from livestock. Though much is unknown, we do have basic knowledge which, when intelligently applied, will substantially reduce the number of human cases. Brucella organisms, though resistant, are destroyed when subjected to adequate heat. The pasteurization of all milk and dairy products will exterminate milk-borne cases and not incidentally many other diseases commonly milk-borne will be reduced. This process is oftentimes impossible, though the rural housewife can be taught the value of heat. Fortunately, pasteurization is practiced in a progressively increasing number of municipalities throughout the country and in such communities human brucelliasis is relatively rare. Frank,[24] of the Public Health Service, states that in 1931 one hundred sixteen cities reported that all raw milk must come from abortion-free herds, and sixteen additional cities reported that grade A raw milk must come from abortion-free herds. Official health agencies everywhere are advocating sanitary legislative control of the dairy industry. Universal pasteurization of milk will not, however, eliminate those human cases attributed to contact with infected animals and carcasses nor the occasional infection occurring among laboratory workers who handle virulent cultures. The occupational control of the disease is somewhat difficult and largely educational. Veterinarians and meat packers can be urged to wear rubber gloves and subscribe to other practical precautionary measures. Infection can take place by the ocular route and the use of eye shields by persons handling living cultures would seem indicated. The parenteral use of killed suspensions of Brucella organisms to produce active immunity is being advocated by some and looks promising. This procedure is required of employes in at least one laboratory.

The diagnosis and treatment of human brucelliasis is of paramount importance. The agglutination test is at this time our most reliable diagnostic measure. Positive reports must be correlated with physical findings, since the blood of many persons shows evidence of antibody reaction either due to frequent contact with abortus organisms or a previous history of having had the disease. Indeed, a positive history may be entirely wanting, since doubtless many cases have been incorrectly diagnosed. It is also wise to collect repeatedly whole blood for cultural study. Standardized laboratory methods should be adopted, for obviously great disparity and lack of uniformity of technic exists among laboratories throughout the land. Because of this lack in agreement a more accurate diagnostic method may be found in the skin test now strongly advocated by several investigators. The treatment of human brucelliasis is chiefly symptomatic. Various biological preparations have been used with no general agreement as to their virtues. The continued use of these products should, for experimental reasons, be encouraged. In no other condition are clinical manifestations so protean; frequent periods of remission make it difficult to attribute value to any biological agent at present in use.

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Discussion follows paper of Dr. Cameron, page 912.

UNDULANT FEVER CONTROL IN WASHINGTON COUNTY, MARYLAND*

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Within the past three years 46 cases of undulant fever have been reported in Washington County, Maryland. In addition to this number of formally reported cases there have been more than one dozen instances in which the presence of this disease was strongly suspected.

All reported or suspected infections have been investigated for accuracy of diagnosis, source of infection, and notes have been made on the clinical progress of the disease. The results of the investigations are summarized as follows:

(1) The diagnosis of the 46 reported cases was confirmed by agglutination of the blood sera with *Br. abortus* antigen in significant dilutions. In the earliest reported cases the diagnosis was determined not infrequently on the basis of the laboratory findings when the blood had been submitted for examination for other suspected conditions, particularly typhoid fever. In the more recently reported cases, however, a provisional diagnosis of undulant fever had been made which was subsequently confirmed by a positive laboratory report.

In those cases in which the presence of the disease was suspected but not formally reported either the laboratory examination failed to confirm the suspicions of the clinicians or no laboratory examination was made.

(2) Ten of the series are still suffering some ill-effects which may be attributable to the disease. Six of the number have been confined to bed at more or less regular intervals for more than two years. Four of the female cases gave a history of one or more abortions. There were two deaths in which undulant fever was regarded as being an important contributing factor.

(3) Twenty-three of the reported cases were residents of the city of Hagerstown and 23 were residents of smaller towns and the rural sections of Washington County.

In Hagerstown it was observed that about 75 per cent of the cases were confined to that section of the city inhabited by those who are apparently in satisfactory financial circumstances and who were receiving a superior type of medical service. It seems probable that other cases have occurred in other areas of the city among less fortunate persons who have not consulted a physician.

(4) Twenty of the cases in Hagerstown used raw milk and cream in varying amounts and for varying periods immediately preceding the onset of the disease. Three of the Hagerstown group used both pasteurized and raw milk or cream. Two of these consumed large quantities of raw cream in order to gain weight.

Twenty-three cases in the smaller towns and rural sections consumed raw milk and cream as a beverage. Five of this group gave, in addition, a history of contact with animals which had aborted.

No cases were reported in persons consuming only pasteurized milk.

(5) Sixteen cases in the city of Hagerstown were traceable to herds supplying nine raw milk dealers. Seven cases in the smaller towns of the County were traceable to three herds serving raw milk dealers supplying these towns. The majority of the remainder of the series were traceable to herds located on the premises on which the patients lived. In five cases the probable source of infection was not ascertained. These cases consumed raw milk obtained from more than one source.

(6) The ages of the patients extended from 13 to 74 years and were divided into the following age groups:

Age Groups	White Male	White Female
0 to 9	0	0
10 to 19	6	4
20 to 29	6	4
30 to 39	6	1
40 to 49	2	7
50 to 59	3	3
Totals	23	23

One case was reported in a black female, aged 33 years.

(7) There were two cases of undulant fever in each of three families. In several households there were other members of the family who apparently had had a past infection.

Apparent increase in the number of cases, the severity of several of the infections and the prolonged chronicity of the disease in many instances contributed to make the control of undulant fever an important problem of the

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County Health Department. Over one year ago it seemed essential that measures be taken to control the spread of the disease.

The white population of Washington County is 67,637, of whom 31,150 are residents of the City of Hagerstown. The colored population of the County numbers 1,021.

The fluid milk supply of Hagerstown is derived from 131 herds serving three pasteurization plants, 38 herds furnishing 25 raw milk dealers and 25 dealer-producers selling cream in the city market. The daily consumption is approximately 2,050 gallons, of which about 625 gallons, or 27.8 per cent, are consumed raw and 1,625 gallons, or 72.2 per cent, are pasteurized.

The obvious solution of the problem in so far as the City of Hagerstown was concerned was to secure the pasteurization of all milk sold in the City. The recommendation that this be done invoked a protest which must have been heard in Richmond. The words "pasteurization" and "prohibition" are in the same category in the minds of many persons in Hagerstown. It was evident that an ordinance requiring complete pasteurization of the milk supply could not be enforced even if it were passed.

An important consideration was the fact that pasteurization of the Hagerstown supply would by no means solve the problem in the County. It would not prevent undulant fever in the smaller towns or rural districts where pasteurization is at present out of the question. Such a measure would, of course, have no influence in reducing the number of cases contracted on the farm by contact with diseased animals.

An effort first was made to test the blood of all cattle producing milk sold to raw milk dealers. This attempt failed because the cattle owners first objected to the cost of having the blood test taken by a veterinarian; then a number protested against the bleeding of the cattle at sufficiently frequent intervals to insure any degree of safety in the herd.

The possible control of the disease by laboratory examination of milk was studied. After careful consideration, the rapid macroscopic agglutination test devised and recommended by Huddleson and Abell was adopted.

Composite herd samples from all herds supplying the City were tested by the Huddleson method. A composite herd sample is defined as one which is obtained from a mixture of all the milk produced at one milking in a given herd.

The results were as follows:

	Number Examined		Total Positive	Total Negative	Per Cent Positive
(1)	38	Herds supplying raw milk dealers	19	19	50.0
(2)	25	Herds supplying raw cream to city market	9	16	36.0
(3)	131	Herds supplying raw milk to 3 pasteurization plants	45	96	36.6
	194		63	131	

Following the examination of the composite herd samples from all herds, specimens were secured from each quarter of the udder of each cow from which raw milk was sold in Hagerstown.

The milk was collected in test tubes 15 cm. long and 2 cm. in diameter. About 10 c. c. were milked into each tube, which was labeled with the tag number of the cow, corked, and returned to the laboratory.

When the samples were collected, a brief history of each cow was taken. The age, number of pregnancies, number of abortions, volume of production, last previous date of freshening, next expected date of freshening, condition of udder, and so forth, were recorded.

LABORATORY TECHNIC

The laboratory procedure is essentially that outlined by Huddleson and Abell in Technical Bulletin No. 123 of the Michigan State College Agricultural Experiment Station.

On delivery of the samples at the laboratory 5 c. c. of 10 per cent alcoholic solution of rennin are added to each tube, which is then placed in a slant rack, and allowed to stand at room temperature until a clear serum has separated from the curd.

The serum is pipetted directly from these tubes in 0.08 c. c. quantities (with a 0.2 c. c. pipette) onto 1-inch squares on a glass plate. Separate 0.2 c. c. pipettes are used for each sample. Sixty examinations can be made at one time on the plate in use in this laboratory. The antigen is dropped from a "standardized dropper pipette" which delivers approximately 0.03 c. c. of antigen suspension for each test. The milk sera and the antigen are thoroughly mixed, using separate tooth picks for each sample, then the plate is gently rotated before being placed on an illumination box. This box is made according to the specifications of Huddleson.

An incubation period of 20 to 30 minutes ap-

pears to be more suitable than the shorter period recommended by Huddleson. Weak reactions are more pronounced after that period has elapsed.

Negative readings are recorded and positive samples are repeated for titration. On the repeated samples dilutions of 1-25, 1-50, 1-100, 1-200, 1-500 are made. Variations in dilutions are obtained by varying the amounts of serum. The amount of antigen is constant. One drop of antigen is added in each square.

This method of eliminating negative reactors by making a preliminary run has effected a very considerable saving in both time and antigen.

In making readings of tests, all suspicious or positive reactions, however slight, are recorded. Such reactions are described as being 1, 2, 3, or 4 plus.

The results of the examination of 428 cattle in 38 herds which supply raw milk to Hagerstown are recorded in *Fig. 1* (see next page). The squares represent the composite herd samples. The bars represent the per cent of positive and negative animals found in each herd. The clear areas signify the percentage of negative and the black the percentage of positive cattle.

Beginning on December 1, 1932, composite herd samples were obtained each month for 12 months and specimens from each cow in each herd were secured in March, June, and September.

After the series had been completed it was apparent that whenever a positive result was obtained in a composite herd sample it was subsequently revealed that more than 20 per cent of the animals in that particular herd were infected.

Nine herds, to which 16 cases of undulant fever were traceable, have been indicated in *Fig. 1*. These herds are numbered 1, 2, 4, 10, 21, 22, 27, 31, and 36. It will be noted that in each suspected herd the composite herd sample was positive and more than 20 per cent of that herd were reactors.

A similar series of tests has been completed on 25 herds from which raw cream was sold in the city market and 34 herds from which milk was sold in 8 small towns in Washington County. Ten cases of undulant fever were traceable to 6 herds in this group. In each incriminated herd it was observed that the composite herd sample had been positive and that more than 20 per cent of the animals were infected.

No cases of undulant fever were traceable to herds having a consistently negative composite herd sample. In all or nearly all negative composite herd samples it was observed that the herd was either apparently completely free from infection or the incidence of infection was less than 20 per cent.

Whenever a positive cow was found efforts were made to eliminate the animal from the herd with the least possible delay. However, a cow was seldom condemned on the basis of a single test, particularly when the result was not definitely positive. The owner was always advised to check our findings by having the animal's blood tested. Whenever this was done the results coincided. Unfortunately for our records the owners so frequently accepted our findings that the number upon which confirmatory blood tests was obtained was relatively small.

Eighty-three reactors are known to have been eliminated from the herds selling raw milk in Hagerstown. Many of the owners admitted that abortion had at some time occurred in these animals. Others asserted that there had been an appreciable reduction in the milk production of reactors. Still others gave a history of retained placenta in the animals in question.

The results of the examination of cows at quarterly intervals as indicated in *Fig. 1* have been summarized in the following table:

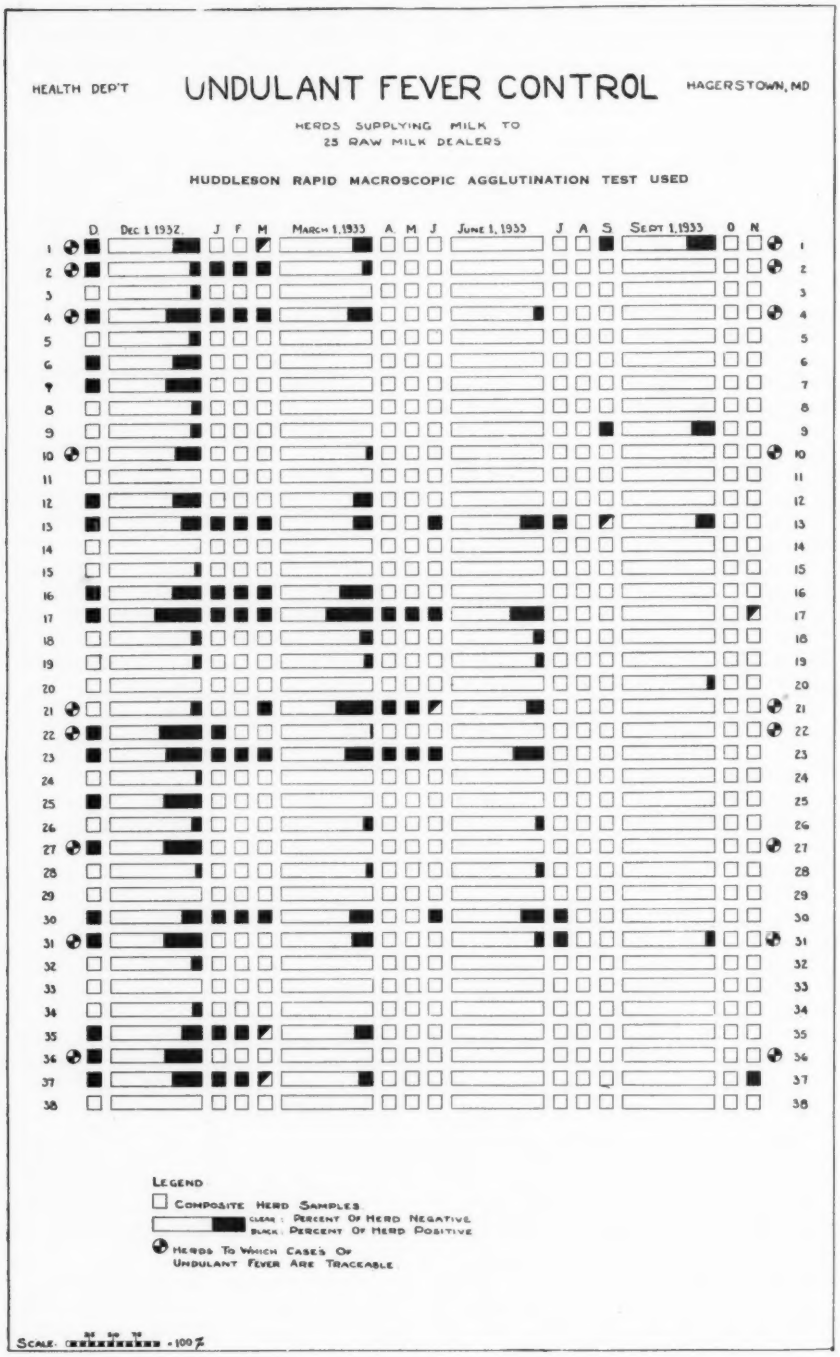
	Dec. 1932	Mar. 1933	June 1933	Sept. 1933
No. negative herds	6	20	27	33
No. positive herds	32	18	11	5
More than 20 per cent	19	11	5	3
Less than 20 per cent	13	7	6	2

Five of the herds which were entirely negative in December, 1932, were still completely negative 11 months later.

It is observed that the infection apparently reappears in certain herds after all known positive animals have been removed. This may be explained in some cases by the fact that cattle which were dry at the time of the previous visits had been added to the herd without having been tested. In two herds the infection reappeared because cattle had been purchased without previous testing and added to the negative animals. Many of the cattle owners had difficulty in securing replacements which were Bang's disease-free.

The cases of undulant fever reported in Hagerstown and rural sections of Washington County since 1929 are indicated in *Fig. 2* (see page 911). They are tabulated according to dates of onset.

In the rural sections of Washington County there has been no marked diminution in the number of cases of undulant fever reported


HEALTH DEP'T
UNDULANT FEVER CONTROL
HAGERSTOWN, MD
HERDS SUPPLYING MILK TO
25 RAW MILK DEALERS
HUDDLESON RAPID MACROSCOPIC AGGLUTINATION TEST USED
D
Dec 1 1932.
J F M
March 1, 1933
A M J
June 1, 1933
J A S
Sept 1, 1933
O N
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
LEGEND
COMPOSITE HERD SAMPLES
CLEAR: PERCENT OF HERD NEGATIVE
BLACK: PERCENT OF HERD POSITIVE
HERDS TO WHICH CASES OF UNDULANT FEVER ARE TRACEABLE
SCALE: 50 75 = 100%

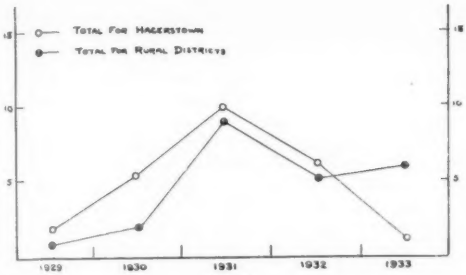


Fig. 2

within the past year. In these areas there has been no serious effort to control the spread of Bang's disease. The herds are known to be infected to practically the same degree as those on the Hagerstown milk shed before the removal of the diseased animals.

In Hagerstown, where the infected cattle have been practically eliminated from the milk shed, there has been an apparently significant decrease in the number of cases reported during the same period.

Within the past twelve months there have been three cases reported in Hagerstown. The history of two of the cases indicates that the onset was about November 1, 1932, and the third in April, 1933. These three cases were traceable to herds which were known to have been heavily infected and from which the infected animals had not been removed until a short time before the cases were reported.

In Hagerstown, the last reported case developed 7 months ago. During the preceding years the cases were reported at intervals of not more than 3 months.

DISCUSSION

The cost of the control program has not been excessive to the Health Department. The inspector is required to inspect the dairies regularly. The securing of samples from individual cows consumes a relatively short time. The results which have been secured to date seem to justify the necessary increase in laboratory work.

The cost of the control program has not been excessive to most of the cattle owners. In many cases the owners have profited because of the elimination of sources of infection and by the removal of poor producers from the herd.

Our experience has emphasized anew the value of making agglutination tests for undulant fever on all cases of suspected typhoid fever or in any undiagnosed fever or even prolonged malaise.

To investigate thoroughly every case in which a positive agglutination reaction for *Br. abortus* was obtained has been found to be of distinct value.

We have confirmed the results of Huddleson and others who found that the serous material from the udders of dry cows gives false agglutinations with *Br. abortus* antigen. For this reason samples are not taken from cows which are almost dry or which have freshened within one month.

SUMMARY

The Huddleson rapid macroscopic agglutination test has been used in the examination of 8,226 samples of milk serum for the diagnosis of Bang's disease in 428 cattle in 38 herds which supply raw milk to Hagerstown.

Twenty-six cases of undulant fever were traceable to 15 herds from which the composite herd samples were positive. In these herds it was revealed that more than 20 per cent of the animals were infected.

No cases of undulant fever were traceable to herds from which the composite herd samples were consistently negative. In this group it was determined either that the herds were entirely free from infection or less than 20 per cent of the animals were diseased.

In Hagerstown concurrent with the elimination of the Bang's diseased cattle there was an apparently significant decrease in the incidence of undulant fever.

In the rural areas where the infected cattle have not been removed from the herds there has been no marked diminution in the number of cases of undulant fever reported.

Our experience indicates that the Huddleson method of examining milk serum is a comparatively simple and practicable method whereby a health officer may rather quickly determine the possible source of a particular case of undulant fever.

It also seems clear that the examination of milk serum for the diagnosis of Bang's disease and the elimination from the herds of diseased animals is an effective method for the control of undulant fever on farms and in communities where pasteurization of milk is impracticable.

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DISCUSSION (*Abstract*)

Papers of Drs. Grayson and Hastings and Dr. Cameron.

Dr. James G. McAlpine, Montgomery, Ala.—Undulant fever, because of the baffling problems connected with its epidemiology, can be discussed almost indefinitely. The sources of infection have been, and are, receiving a great deal of attention. It is with this end in view that so much laboratory work has been done in an effort to identify the different types or varieties of the Brucella group. The two methods most suited for routine work are the dye plates of Huddleson and the agglutinin absorption procedure. The differences in glucose metabolism, the effect of various concentrations of carbon dioxide and surface tension are more fitted for research. Yet by all these methods intermediate strains are found which cannot be classified as *Br. abortus* bovine or porcine or true *Br. melitensis*. This seems to lend weight to the hypothesis that originally they all sprang from one organism and later through host adaptation took on new characteristics which became permanent as they remained for long periods in that host.

Br. abortus porcine and *Br. melitensis* appear to be most active both metabolically and in respect to virulence. *Br. abortus* bovine is the least adaptable to artificial environments, since it requires carbon dioxide for its primary growth. After long continued cultivation all the strains lose some of their characteristics, making them doubly difficult to classify. Microbic dissociation is an important factor in this group and unless it is considered, wrong classification may result. It is probable that many so-called *para* strains are R. resistant dissociates.

Furthermore, the fact that a strain isolated from a human case may be classified as bovine, porcine or caprine does not mean necessarily that the infection was derived immediately from the cow, the hog, or the goat. The bovine strain being less virulent is most often confined to cows, although it has been isolated from horses. The porcine type, while apparently indigenous to hogs, has been found frequently in cattle. We know that cattle may be infected artificially very easily with *Br. melitensis* and it is probable that close association with infected goats might cause a spontaneous spread in cows. This is important when we consider the large goat-raising region in the Southwest.

How much true melitensis infection we have in this country is a question. Dr. Meyer agrees with Giordana that human cases of *Br. melitensis* infection differ from those caused by *Br. abortus*. In the former type he maintains that the duration of the disease is much longer than in the latter and is often characterized by relapses. It also seems probable that these chronic cases are the ones most frequently missed by the agglutination reaction.

The amount of infection in cattle herds is considerable and it is spread the length and breadth of this country. In various sections it differs in intensity. Drs. Grayson and Hasting mention one state as having 90 per cent. I am sure that this figure was taken from one of our papers published by the Connecticut Agricultural Experiment Station. The original wording was ambiguous. What we meant to say was that in a survey involving a large percentage of the herds in that State we found 90 per cent of the *herds* infected, but in the individual herds the number of infected animals averaged about 30 per cent.

As far as the cattle industry is concerned, the eradication of the disease by removal or segregation of the reactors through the blood test appears to be the most feasible. In Connecticut we freed a large number of herds by this procedure and maintained them clean. This can be done only by intensive and frequent testing combined with scrupulous attention to all details. When new animals are added to a clean herd they should be placed in quarantine which, if the animal is pregnant, should last until after she has calved. A first calf heifer may be infected and not show a positive agglutination test, before calving.

Abortion is only one manifestation of Bang's disease. The fact that a cow may abort and afterwards give birth to normal calves does not prove that she is not shedding the organisms. We took the stand that any reactor to the blood test was a potential menace to the herd. In our experience also, once a reactor always a reactor, and we followed some of these animals over a period of at least eight years.

Like other chronic disease infections, abortion is difficult to immunize against. The use of living vaccines has as a rule proved inefficacious. In fact, in one section of the West, where undulant fever is quite prevalent, the belief is expressed that the large number of cases is due to the wide application of the living vaccine several years previously. Furthermore, since the agglutination test is the one generally used to determine infection, this index is often destroyed because the animals become reactors after vaccination. Huddleson's avirulent culture offers possibilities and a recent report from England states that by using it intracutaneously the agglutination reaction is not obscured.

As far as the urban population is concerned, pasteurization of milk is the most useful method of control. In rural districts the problem is complicated. The freeing of herds by eradication or segregation is a slow process, but it might be possible to combine tuberculosis and infectious abortion eradication in some sections.

From the standpoint of the public health laboratory, the agglutination test for the diagnosis of undulant

fever requires considerable study. Several years ago Dr. Gibbes brought this out very forcibly. In most laboratories only one strain is used in the preparation of the antigen. When we look over the large number of serological studies which have been made on the Brucella group we are impressed first with the similarity of the three organisms, but second, by antigenic differences which enable us to divide them into groups. Good, Dimock and Harms emphasized the use of polyvalent antigens for blood testing in infectious abortion of cattle. Perhaps fewer cases would be missed if polyvalent antigens were used in undulant fever. Huddleson's new opsono-cytophagic test may help us to solve this difficulty.

THE RETICULO-ENDOTHELIAL SYSTEM: A RECONSIDERATION*

By ROGER DENIO BAKER, M.D.,†
Durham, North Carolina

The reticulo-endothelial system (R. E. system) has been the subject of several reviews[1,2,3,4] since the term was coined by Landau and Aschoff in 1913. A bewildering array of papers regarding it has appeared, and the system has been evoked to explain the most diverse phenomena, especially in immunology.[5] We must know exactly what the system comprises and how it functions before we can analyze these papers critically.

As is true with many terms used in the medical sciences, and especially true of the R. E. system, it is impossible to gain a clear idea of what the term means unless we take the trouble to trace the historical development of the concept.

I should like, therefore, to present first the original historical evidence for the concept of an R. E. system, then point out what the system does not comprise, discuss some of its functions, and finally speak of a practical use of the system.

HISTORICAL

Before Metchnikoff, various investigators had called attention to cells of the body which engulf foreign matter. Ranvier[6] studied the "milk-spots" of the omentum of animals and found in them large phagocytic cells which he called clasmatocytes because they seemed to be capable of breaking off bits of their protoplasm. Mallory[7] emphasized the occurrence of phagocytosis of red cells and lymphocytes in the lymphoid tissue of the intestine and in the lymph nodes in his work on typhoid fever in 1898.

Metchnikoff was the first to mention the fact that widely scattered cells of the animal body possess in common the power of phagocytosis. In his book, "Immunity in Infectious Disease," published in 1901, he[8] speaks of two principal categories of phagocytes: (1) macrophages and (2) microphages, to be distinguished not only by structural but also by striking physiological differences. (The microphages correspond to our polymorphonuclear neutrophils.) Under the term macrophage he includes the fixed macrophages and the free macrophages. He says:

> "In addition to the mobile ameboid cells, represented by many forms of white cells, it is necessary to distinguish the fixed ameboid cells. These are, by definition, attached in certain parts of the body; which does not, however, prevent them from extending their ameboid processes in many directions and from seizing foreign bodies and certain elements of the same organism."

Ribbert[9] was apparently the first to use the method of vital staining to demonstrate the similarity in function of the widely separated cells of the R. E. system. He injected solutions of lithium carmine intravenously into animals. Such solutions, when examined under oil-immersion by transmitted light in the ordinary microscope, naturally show no carmine particles whatsoever, and yet within the cytoplasm of certain cells of the body inclusions of the dye are found which can be easily seen under the low power of the microscope. Ribbert thus made use of the method of vital or intra-vitam staining, from which the whole conception of the R. E. system was to develop. Ribbert's article appeared in 1904. He had been using the lithium carmine vital staining method in experiments on kidney function. He pictures the occurrence of the granules of carmine in the renal tubules, where it lies in radially arranged columns in the protoplasm. He also shows the granules within the liver cells. These were the only places in which parenchymal cells of organs showed the granules. Elsewhere the dye was found in a concentrated granule-like form in the Kupffer cells of the liver and in cells of the connective tissue. He states that there are cells with many large granules and others with only a few granules often seen only by more careful examination. He points out that many of the cells of connective tissue seem to contain no granules at all. But in his picture he does not distinguish clearly between fibroblasts and macrophages as have later workers. It is defi-

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nite from his figures, and he calls attention to the fact, that the endothelial cells of capillaries, as, for example, those in the connective tissue, contain no dye. His plate shows the dye-containing cells in the lymph node sinuses, both lining these channels, and also well away from their walls; in the lymphoid tissue itself; lining the capillaries of the bone marrow; and also free in the fluid of an ovarian follicle and in the surrounding stroma.

Following his description of the location of the dye, he says:

"So much concerning the localization of the carmine, about which, of greatest interest, is the fact that the dye comes to lie not in all of the cells of the body, but only in very definite ones, which accordingly have a particularly intimate affinity towards carmine."

Ribbert presents in his brief article the essence of the later works of Goldmann[10] and Kiyono.[11]

Kiyono, working in Aschoff's laboratory, amplified Ribbert's work with lithium carmine and used other vital dyes. His monograph, "Die vitale Karminspeicherung," was published in 1914. As to the fundamental facts concerning the stainable cells, derived from normal animals, Kiyono adds little, except a differentiation of fibroblasts from macrophages. But with regard to experimentally produced inflammatory processes and tumor growth he goes much further and shows how the cells of the R. E. system which participate in these processes can be marked by vital staining.

Figures from Kiyono's plates show, among other things, the following:

Fig. 1 shows macrophages from the peritoneal exudate of the rabbit. Even during the mitotic division the marking of the cells with the dye stuff is maintained. *Fig. 5* shows fibroblasts formed in the peritoneal cavity because of the presence of sterile pieces of sponge. *Fig. 6* shows histiocytes, the term used by Kiyono for cells which are very similar to the macrophages of Metchnikoff, if not identical. Comparing *Fig. 5* of fibroblasts with *Fig. 6* of histiocytes, it is seen that the nucleus is smaller than that of a fibroblast, its nuclear framework denser than that of a fibroblast, in consequence of which the nucleus is darker. The protoplasm lies in the tissue clefts and processes are extended in all directions. *Fig. 7* shows the inflamed omentum 24 hours after the introduction of sterile pieces of sponge into the peritoneal cavity. The increased number of polymorphonuclear neutrophils, which incidentally do not contain carmine, is evident. Histiocytes with large red inclusions are in evidence, and also branching fibroblasts with very sparse and delicate granules. *Fig. 8* shows the collection of histiocytes, that is, macrophages, phagocytic mononuclear cells, or R. E. cells, whatever one wants to call them, about a piece of sponge which had been introduced into the peritoneal cavity six days previously. Histiocytes have fused to form a giant cell. Fibroblasts with delicate granules are shown, as well as one fibroblast in mitosis.

It remained for Aschoff and Landau to emphasize the significance of the widely separated cells of the body which had been marked by the vital dyes. Their basis for the definition of the R. E. system rested largely on the facts of vital staining, but was supported by numerous observations which can be made in the microscopic study of almost any autopsy.

Aschoff's concept of the R. E. system is given in his "Lectures on Pathology" delivered in the United States in 1924. He points out that intra-vitam staining results in the appearance of dye granules in certain cells, in consequence of which these cells can be distinguished at once from most of the parenchymatous cells, from the ordinary blood cells, myeloid as well as lymphoid, from the lymphocytes of the lymph nodes, and from the plasma and mast cells. These granules are of variable size. Arranged according to the fineness and compactness of these granules, an ascending series of vitally staining mesenchymal elements can be tabulated as follows:

(1) The endothelial cells of the blood and lymph vessels. They take the dye only when the staining has been carried to an advanced degree and only in the form of the very finest granules.

(2) The fibrocytes, or ordinary connective tissue cells. They store the dye in variable degree after sufficiently prolonged staining, also in the form of rather fine granules. They are more easily stained than the endothelial cells.

(3) The reticulum cells of the splenic pulp and of the cortical nodules and cords of lymph nodes. These cells readily take the dye and stain more deeply than the connective tissue cells, but in the rapidity and intensity of the stain fall behind the members of the following groups.

(4) The reticulo-endothelial cells of the sinuses of lymph nodes, of the blood sinuses of the spleen, of the capillaries of the liver lobules (Kupffer's stellate cells), of the capillaries of the bone marrow, of the suprarenal cortex, and of the hypophysis.

(5) The histiocytes, as Aschoff and his workers designated the wandering cells of the connective tissue, the clasmatocytes of Ranvier, to distinguish them from the cells that give rise to connective tissue (the fibroblasts or the fibrocytes). These cells stain almost as readily as those of *Group 4*, especially when in a state of heightened activity.

(6) The splenocytes and vitally staining monocytes (endothelial leukocytes, blood histiocytes) which have their origin from the histiocytes (*Group 5*) and the R. E. cells (*Group 4*).

Aschoff proposed eliminating *Groups 1* and *2*, which stain either faintly or not at all, and which function differently from the other groups. He also proposed combining under a single heading *Groups 3* and *4* because of their common function of producing reticulum and of lining sinusoidal blood and lymph spaces. He suggested that these two groups be called the reticulo-endothelial system. Kiyono also designated the R. E. cells as histioblasts, because of their capacity of giving rise to freely movable cells which in every way resemble the histiocytes of the connective tissue.

Groups 5 and *6* were combined by Kiyono under the name of histiocytic elements.

But to overlook the details of a probably unnecessarily complicated classification, it is apparent that the broad division is exactly the same as that given by Metchnikoff, that is, into fixed or stationary ameboid cells and into migratory or mobile cells, of a great system of macrophages.

In contrast to the complicated scheme of the R. E. system offered by Aschoff, the conclusions of W. H. Lewis are presented. He[12 13] stated that mononuclear blood cells can transform into magrophages, epithelioid cells and giant cells. In other words, the mononuclears, macrophages and epithelioid cells are thought of as merely different phases of the same cell type, and these different forms are in the nature of temporary functional variations.

Apparently Lewis extends this idea of the unity of various cell types rather broadly and considers most of the components of the R. E. system as forms of macrophages.

In speaking of macrophages, he says:

"The size of these cells appears to depend on the amount and character of the ingested material, the stage of the digestion of the same, and the degree to which such digested material has been built up into cell protoplasm. The shape depends partly on the configuration of the tissues and partly on conditions that alter the surface tension. In spreads of the lungs, spleen, thymus and lymph nodes, the macrophages are usually more or less spherical and the elongated forms, so abundant in connective tissue, are rare. Many of the macrophages of the lung contain carbon particles and are commonly called dust cells, while those in the liver (Kupffer cells) often contain bile pigment from digested red blood cells."

Rous and Beard,[14] who have recently devised an ingenious method of obtaining Kupffer cells for cultivation by the action of an electromagnet on the iron-fed cells, say, however:

"The Kupffer cells have the general character of clasmatocytes, but they exhibit in addition special traits which distinguish them from these phagocytic elements of the spleen and of old inflammatory exudates which are supposed like them to be components of the R. E. system. It is plain that this system consists of elements differing from one another to no inconsiderable extent."

THE TERM RETICULO-ENDOTHELIAL SYSTEM AND WHAT IT DOES NOT COMPRISE

The term, R. E. system, does not include all the reticulum plus all the endothelium of the body. Even though R. E. cells line vessels, they may be more of the nature of sessile macrophages than of endothelium. It does not refer to the vast majority of the endothelial cells of the body, for example those lining the capillaries and blood vessels of the muscles, the heart and the nervous system. It has already been pointed out that capillary endothelium is, in general, not avid for the soluble vital dyes, and Brickner[15] showed the same to be true for colloidal carbon and finely suspended carbon particles.

Another question which often arises is this: is the term phagocytic system not just as good a one to use as R. E. system, since phagocytosis seems to be the most apparent feature of the R. E. system? No, because the polymorphonuclear neutrophils are also exceedingly phagocytic. The R. E. system refers to only a part of the phagocytic system, that part in which the cells are of the large mononuclear type, be they fixed or mobile.

Just as phagocytosis is not a function specific for the R. E. system so is staining with vital dyes not specific. It has already been seen in Ribbert's plate that the parenchymal cells of the liver and kidney stain vitally. It seems true that in vital staining the more the dye injections are pushed the greater the number of cells which stain, and the greater the kinds of cells which stain.

Downey,[16] in 1918, showed that polymorphonuclears were very active as phagocytes for

trypan blue and lithium carmine if blood from the larger vessels was examined within from one-half to two hours after the intravenous injection of the dye. Thus staining with vital dyes is not specific for the cells of the R. E. system, although it is only fair to say that when preparations are examined after several days of vital staining, such as those by Ribbert and Kiyono, already shown, the polymorphonuclear cells are not stained.

Again, some have made the attempt, as for example Hadfield and Garrod,[4] in their article on the R. E. system in "Recent Advances in Pathology," to show that the phagocytosis of certain bacteria and protozoa is carried on by the reticulo-endothelial cells only. This would be a distinguishing feature of the R. E. system. How far this is really true I do not know, but the example they cite to prove their contention is certainly incorrect. They say that in sections of tuberculous tissue tubercle bacilli are never found within polymorphonuclears, nor are they found within leukocytes in sputum or pus. This is certainly not true, for I have seen tubercle bacilli in polymorphonuclears in sections of tuberculous lungs. Those who have worked with experimental tuberculosis also know that after experimental injections the polymorphonuclear can engulf the tubercle bacilli. It is true that at the time that tuberculous tissue is usually examined, most of the tubercle bacilli are within large mononuclear cells.

In spite of the considerations just mentioned, the general principle underlying the concept of an R. E. system is valid. One must, however, fortify himself with much accessory information before he can feel at all sure of what the system really includes.

Since others are to speak of the problem of the leukemias and tumors of the system, I would like to point out, merely, that we should not be too willing to identify cells as belonging to the R. E. system. The R. E. system has been defined in terms of function more than in terms of morphology. We are entitled to ask for functional proof that certain cells belong to this system, therefore, and when a leukemia or a new growth is said to spring from cells of this system we should not be satisfied with merely morphological similarity of the cells in question to those of the R. E. system. It is not practical to stain human beings by vital dyes as was done in animals by Ribbert, Kiyono, Goldmann and others. However, it is possible, in studying the blood, to stain living cells after these cells have been removed from the body by the well known supravital staining of fresh blood films with neutral red and other dyes.

With regard to the tumor overgrowths of the system, there is more difficulty in applying a functional test to the cells by the use of vital or supravital dyes. The supravital technic for the examination of lymph nodes, which consists of puncture of the glands, worked out and used by Forkner[23] can, however, nearly always be applied to the living patient. It can probably also be used at autopsy.

Even though it is desirable in every case to show that given cells act like those of the R. E. system, it is true that such a thing as a tumor of the developing cells of the R. E. system might occur, and that the cells had not yet developed to a point at which they would store vital dyes. Here it would be necessary to rely on morphological criteria alone, but since the origin of the cells of the R. E. system is little understood by the anatomists, biologists, physiologists and hematologists, it is most dangerous for the pathologist not acquainted with such genetic relationships to place dogmatically a given tumor in this or that category until he can prove the relationships suggested.

SOME FUNCTIONS OF THE R. E. SYSTEM

The R. E. system is active in scavenging all sorts of materials foreign to the blood or lymph stream or the tissue spaces, including foreign bodies, micro-organisms, and probably colloidal and soluble substances, as well as dead cells from the organism itself. It functions in blood destruction and bile formation (see the excellent review by Rich[17]). It takes an important part in abnormal fat metabolism and in conditions such as Gaucher's disease. Apparently the epithelioid cells of the tubercle, the cells which constitute a leproma, the Dorothy Reed cells of Hodgkin's disease and the large mononuclear cells associated with some of the fungus diseases, are to be thought of as integral parts of the R. E. system. With respect to the ever-fascinating relationship of the R. E. system and immunity the review by Jaffé[5] is referred to.

In commenting on the Lewis-Gregory motion pictures showing living macrophages in action, Manwaring[18] spoke of the phenomenon of hydrophagocytosis, in which macrophages mechanically drink the surrounding plasma. Lewis[19] has since proposed the term pinocytosis, drinking by cells, as a companion word to phagocytosis, eating by cells. Of this phenomenon of pinocytosis, Manwaring said:

"Immunologists will see in it confirmatory evidence of Metchnikoff's belief that the macrophages are the main place of disposal of soluble antigens, and the logical chief site of synthesis of specific antibodies."

I[20] have been much interested in the role of the R. E. system in the normal transport of fat. As is well known, after a meal rich in fat, the lymphatics of the mesentery become filled with yellowish white opaque chyle, which is mostly fat. These lymphatics are the lacteals. They pass from the wall of the intestine to the mesenteric nodes. The chyle can be seen within the mesenteric nodes after digestion, and if these nodes are incised, chyle runs out. Also issuing from the hila of these nodes there are larger efferent lymphatics or lacteals which carry the chyle to the thoracic duct and thence to the blood stream.

Schäfer[21] described the ferrying of fat within phagocytic cells from the intestinal lumen into the lacteals of the villi. This may occur. However, as to the form which the fat is in, once it gets into the lacteals of the villi, he is not clear. I have studied the chyle of the lacteals with this problem in mind. The chyle of the lacteals emerging from the intestinal wall is composed largely of very fine fat particles, with almost no cells at all in it. Study of these cells shows that they are practically all lymphocytes, with very rarely a large mononuclear cell which is not obviously phagocytic. The fact to emphasize, however, is the enormous amount of finely divided fat and the insignificant number of cells of any kind in comparison. It is apparent, then, that in the lacteals afferent to the mesenteric lymph node, in the cat, at least, fat is not transported to any appreciable extent by the cells of the R. E. system.

If the chyle of the efferent lacteals of the mesenteric nodes or of the thoracic duct is studied, it is found that the fat particles are nearly all free, that cells are few in number, though more numerous than in the lacteals afferent to the nodes, and that the great majority of the cells are lymphocytes, that is, nonphagocytic. The exceedingly rare large mononuclear cells are not obviously larger than in the blood stream and do not obviously contain fat.

It is thus evident that fat within the lacteals is transported largely in a free state, not within phagocytic cells.

If the mesenteric nodes are examined after fat-feeding, much of the fat is also free within the sinuses of the nodes during the height of fat absorption.

However, the presence of fat in the R. E. cells of the sinuses and also at times within the R. E. cells of the lymphoid tissue itself can be easily demonstrated by frozen sections stained with Scharlach R or Sudan III.

I show a reproduction of such a preparation from Dabelow.[22] A guinea pig was kept on a high fat diet for three days and killed four hours after the last feeding. The R. E. cells of the sinuses are filled with fat and fat within phagocytic cells also occurred within the lymphoid tissue. In other words, fat is taken up in considerable amounts by R. E. cells within the nodes. These cells are apparently quite well fastened in place, for as I have already noted, very few are found within the lacteals efferent to the nodes.

It might be thought that the R. E. cells acted on the fat in some way and changed its composition. Dabelow, in fact, states that in the vas efferens the fat is more finely emulsified and stains a browner color with Sudan red than in the vas afferens. I have, myself, not been impressed with the difference in size of fat particles before and after they passed through the mesenteric nodes. Also, careful chemical studies done in England a number of years ago showed no essential difference in the fat before and after it passes through the nodes. It would seem not definitely proved, therefore, that the R. E. cells of the nodes have any specific effect on the passing chyle.

Curiously enough, Dabelow has found moderate numbers of fat-filled macrophages or R. E. cells in the lymph node sinuses of guinea pigs after the animals have been completely without food for five days. Their significance and origin is uncertain. His explanation which seems to me to be questionable is that fat in the starved animals is derived from the mesenteric fat.

I bring to your attention this activity of the R. E. cells of the mesenteric nodes mainly to show the constant participation of these cells in normal metabolic processes. The problem of the reason for their activity has yet to be solved. Surely their phagocytosis of fat is only an incidental process in fat metabolism.

CLINICAL APPLICATION OF STUDIES OF THE R. E. SYSTEM

Colloidal metals may be taken up by the R. E. system which renders organs rich in these cells opaque to x-rays. Thorium dioxide, for example, has been rather extensively used in human beings to outline the liver and spleen

after intravenous injection of the material. If it is injected into or beneath the skin, the regional lymph nodes can be rendered opaque to x-rays. The numerous uses in diagnosis of lesions need merely to be suggested.

I present photographs of x-rays of mice, one of which has been given thorium dioxide via a tail vein. The normal control shows the bones, especially those of the skull, to be the most radio-opaque part of the mouse. The dome of the diaphragm can be made out, but the rest of the abdomen is rather homogeneous except for intestinal gas. The mouse which has received thorium dioxide, however, shows an intensely opaque spleen and liver. The bones are possibly slightly more opaque. One can even make out the various lobes of the liver. Sections of these organs show the refractile, non-stained granules of thorium dioxide in the reticulo-endothelial cells, especially of the spleen and the liver. The lantern slide shows several of such granule-laden Kupffer cells in the liver of a mouse.

SUMMARY

The concept of a reticulo-endothelial system was suggested by Metchnikoff, who observed that many large mononuclear cells of the body had the common function of phagocytosis. This concept was put on a firmer basis by those who used the method of vital staining, and Landau and Aschoff gave the system a name in 1913. The name reticulo-endothelial system is not good because it suggests the separate tissues, reticulum and endothelium, rather than the function of the system and the close relationship of its parts. The term reticulo-endothelial system is so commonly employed now, however, that it is impossible to change it and probably undesirable to change it until more information on the nature of the cells is obtained. In dealing with pathological processes thought to be associated with the system, such as leukemias and new growths, it should be remembered that the system is defined on a functional basis, that of vital staining, and that this functional test should be applied to the cells in question wherever possible. The system takes part in immunological processes. To what extent this occurs is not yet clear. The system is very active in normal and abnormal processes of many kinds. Phagocytosis by R. E. cells of injected substances opaque to x-rays renders possible the outlining of organs and lesions not ordinarily demonstrable by the method of x-ray.

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BICHLORIDE OF MERCURY POISONING*

A STATISTICAL STUDY OF 302 CASES

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This report consists of a study of the case records of all patients treated in the Charity Hospital for poisoning with mercuric chloride during the sixteen year period from June, 1917, to June, 1933. The criterion for diagnosis was the statement of patients or relatives that the drug had been ingested, inserted into the vagina, or used in solution as an enema or douche; or the presence of a typical picture of bichloride poisoning. Examination of the stomach contents, urine, or feces for mercury was performed in too few cases to be available as a criterion.

GENERAL DATA

The records of 302 patients comprised the material for this study. There were 72 deaths, a mortality of 23.8 per cent. This is considerably higher than the mortality in the series of 135 patients "poisoned with some form of mercury" reported by Weiss,[1] of whom only 6 per cent died, but parallels the mortality in the series reported by Goldblatt[2] (28 per cent in 18

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cases), and by Peters, Eisenman and Kydd[3] (25 per cent in 37 cases).

Symptoms attributable to the toxic action of mercury appeared in 143 of the patients, or in 47.3 per cent of the total number. The mortality in these "toxic" cases was therefore 50.4 per cent. The intoxication was mild or of moderate severity in 61 patients; in 82 patients it was very severe. The mortality in cases of severe mercury poisoning was therefore 87.8 per cent.

One hundred seventy-seven of the cases occurred in white females, 89 in white males, 32 in colored females, and 4 in colored males. White females thus constituted more than half of the total number of patients and were by far the largest single group.

ROUTE OF ADMINISTRATION

Two hundred seventy-eight patients took the drug by mouth, 20 by insertion of a tablet into the vagina or by the use of a bichloride douche, and 4 used solutions as enemata.

The incidence of toxic symptoms and the mortality was much higher in cases of vaginal administration than of ingestion* (*Table 1*). The

Table 1

TOXICITY AND MORTALITY ACCORDING TO ROUTE OF ADMINISTRATION

Route	Total No.	No. Toxic	Per Cent Toxic	No. Deaths	Per Cent Gross Mortality	Per Cent Mortality Toxic Cases
Oral	278	123	44.2	65	23.4	52.8
Vaginal	20	18	90.0	7	35.0	38.9
Rectal	4	2		0		

difference is probably due to more complete absorption from the vagina than from the stomach, for obvious reasons (inability to eject the drug). In patients manifesting toxic symptoms, however, the mortality in cases of vaginal administration was lower than that in cases of ingestion. This difference is adequately explained by the absence of shock deaths following vaginal administration (*vide infra*).

DOSAGE

Of the 257 patients in whom the dosage was known, 5 patients took less than one tablet, 59 took one tablet (7.3 grains), 80 took two, 39 took three, 22 took four, 16 took five, and 36 took six or more tablets. Nearly all of the patients who administered the drug by vagina used only one tablet, usually inserted undissolved.

One tablet or less taken by mouth was comparatively innocuous. No manifestations of mercury poisoning appeared in any of the patients who took less than one tablet. Of the 59 patients who took one tablet, 8, or 13.5 per cent, were "toxic," and only one died, a mortality of less than 2 per cent. The amount of mercuric chloride in a single tablet, if completely absorbed, can, however, certainly cause death, as is evidenced by the death of several patients following the vaginal insertion of only one tablet.

The mortality increased proportionally with the dose until more than three tablets of the poison were taken. When four or more tablets were taken, the mortality remained fairly constant, irrespective of the absolute dose. Thus, among the patients who took two tablets the mortality was 12.5 per cent; of those who took three, 20.5 per cent died; 50 per cent of those who took four tablets died, 37.5 per cent of those who took five, and 50 per cent of those who took six or more.

Recovery occurred in some patients who took very large doses. One patient survived, after a very stormy course, who had taken 73 grains.

FACTORS IN EARLY PROGNOSIS

Aside from dosage, four factors are reputedly important in the early prognosis of patients who have taken poison. These are the emesis interval, lavage interval, physical state of the drug (dissolved or not), and the condition of the stomach (empty or full).

Emesis Interval.—This was known in 156 cases. These cases were grouped according to whether vomiting occurred less than five minutes after the poison was taken, between five and fifteen minutes, fifteen and thirty minutes, thirty and sixty minutes, and later than an hour. In each of these groups approximately 40 per cent of the patients were "toxic" and about 20 per cent died. Seven patients did not vomit; all of these became "toxic," and six of them died.

Lavage Interval.—This could be determined in 168 cases. The incidence of toxic manifestations and the mortality remained constant at various lavage intervals up to one hour; there was a sharp increase in mortality when lavage was delayed longer than an hour. Of seven

*Vaginitis due to local corrosive action of mercuric chloride was not listed as a sign of mercury poisoning.

patients who received no lavage, all were "toxic" and six died.*

Physical State of Drug.—Whether the drug was taken dissolved or undissolved had a decided influence on mortality. The state of the drug was recorded in 136 cases. Of the 96 patients who took the poison undissolved, 12 died, a mortality of 12.5 per cent. Of the 40 patients who dissolved the drug before taking it, 13 died, a mortality of 32.5 per cent.

Condition of Stomach.—The incidence of toxicity and the mortality were much higher in patients who took the drug on an empty stomach than in those whose stomachs contained food. Thirty-two patients were known to have taken the poison on an empty stomach; 14, or 43.7 per cent, became "toxic," and 7, or 22 per cent, died. Fifty-five took it shortly after they had eaten; 16, or 29 per cent, became "toxic," and 5, or 9 per cent, died.

SYMPTOMS

The more significant symptoms of mercury poisoning recorded in these patients, and the frequency with which they occurred, are listed in *Table 2*.

Table 2

SYMPTOMS ACCORDING TO ROUTE OF ADMINISTRATION

Symptoms	Oral Cases (123)		Vaginal Cases (18)	
	Number	Percentage	Number	Percentage
Stomatitis	34	27.6	14	77.8
Significant vomiting*	78	63.4	15	83.3
Abdominal distention	13	10.6	3	16.7
Diarrhea	84	68.3	12	66.7
Signs of renal damage	80	65.0	11	61.1
Shock	22	17.8	0	0

*"Significaat vomiting" refers to emesis which continued longer than twelve hours (for the first several hours vomiting may be due to the effects of the emergency treatment, emetic, lavage, etc.) and vomiting which appeared later in the course of the intoxication. "Signs of renal damage" refers to albuminuria, cylinduria, oliguria, anuria or nitrogen retention.

Two rather striking differences in symptoms occurred according to whether the drug was administered by mouth or by vagina. The incidence of stomatitis was much higher in the vaginal cases, while shock occurred only in patients who took the bichloride by mouth. Other symptoms occurred with approximately equal frequency in the two groups.

Since stomatitis is certainly an effect of mercury which has been absorbed, it would seem that more mercury was absorbed when the bichloride was administered by vagina, even though the average dose was much less than in patients who took it by mouth. This conclusion is strengthened by the much greater incidence of toxic symptoms in cases of vaginal administration (*Table 1*).

The conclusion also seems justified that shock is definitely due to corrosion of the upper portion of the gastro-intestinal tract by unabsorbed bichloride, and is identical with the collapse induced by the ingestion of other caustic poisons. This conclusion was reached by MacNider[6] in his studies of experimental mercuric chloride intoxication.

FACTORS IN LATER PROGNOSIS

We considered that a study of the courses of patients who developed definite symptoms of mercury poisoning might reveal important factors regarding the prognosis of individual cases. Four factors were found to be of value: the promptness of the onset of any symptoms of poisoning, the time at which oliguria appeared and its duration, the presence of anuria and its duration, and the levels to which the non-protein nitrogen and creatinine of the blood rose.

Time of Appearance of Toxic Symptoms.—This data was available on 118 patients. Nearly all of them developed symptoms of mercury poisoning within two days after the poison was taken (122, or 95 per cent), the majority on the first day (83, or 70 per cent). Toxic symptoms appeared on the third day in five patients, and on the fourth day in one; in none did toxic symptoms appear later than the fourth day.

The mortality varied directly with the time of appearance of symptoms of poisoning: the earlier their appearance, the greater the mortality. Of the patients whose symptoms appeared on the first day, 56 died, a mortality of 67.5 per cent; of those who first became "toxic" on the second day, 10, or 34.5 per cent, died, and on the third day, 1, or 20 per cent.

Oliguria.—There were twenty-seven patients who at some time during the course of the intoxication showed well marked diminution in the output of urine, but who never had anuria lasting as long as 24 hours. Fifteen of these patients died, a mortality of 55.5 per cent, which was not significantly higher than the

*If, as the data regarding the significance of emesis and lavage indicates, these factors are indifferent in prognosis unless they occur very late or not at all, the natural inference is that following its initial corrosive action mercuric chloride is absorbed rather slowly from the stomach. These factors are impossible of accurate determination, however, since persons who have taken poison can hardly be relied upon to judge intervals of time correctly. Both clinical experience[4] and experimental evidence[5] indicate that mercuric chloride is very rapidly absorbed.

mortality of "toxic" cases in general (51.4 per cent): thus the mere appearance of oliguria did not add to the gravity of the prognosis. The time of onset of oliguria and its duration were, however, of prognostic significance. Of 8 patients in whom oliguria appeared on the first day of the intoxication 7, or 87.5 per cent, died; of 19 who developed oliguria later, only 8 died, a mortality of 37 per cent. Of 16 patients in whom oliguria persisted longer than 3 days, 14, or 87.5 per cent, died; of 9 patients in whom the duration of oliguria was 3 days or less, only 1 died, a mortality of 11 per cent.*

Anuria.—Forty patients showed anuria of 24 hours' duration or longer. Thirty-seven of these patients died, a mortality of 92.5 per cent. Anuria appeared within the first 3 days of the intoxication in 32 of the cases (80 per cent), but the time of its appearance had no effect upon the prognosis; appearing at any time, it was a grave prognostic sign.

No patient survived who was anuric longer than 3 days, although patients have been known to recover who have been anuric for 5 days or longer.[7] In several patients of this series who had been anuric for longer than 3 days, the secretion of urine was reestablished, but death occurred nevertheless.

Nonprotein Nitrogen and Creatinine.—(*Table 3*) Generally speaking, the mortality increased directly with increasing N.P.N. and creatinine. As the N.P.N. level exceeded 125 mg. per cent, there was a sharp rise in mortality; the same was true of a creatinine level above 3 mg. per cent. A N.P.N. above 190, or a creatinine above 5, always bespoke a fatal termination.

There have been, however, reports[8] of patients who survived whose creatinine levels exceeded 5; Gatewood and Byfield[9] and Campbell[8] do not believe that creatinine retention has the same significance in mercuric chloride nephrosis that it bears in chronic renal disease,[10] but a high creatinine level must, we believe, always be considered a grave prognostic sign in mercury poisoning.

No case of marked azotemia occurred in the absence of oliguria or anuria, such as the one reported by Foster,[11] though a slight increase of the nonprotein nitrogen, usually with a normal creatinine value, occurred occasionally in the presence of a seemingly adequate urinary output.

Table 3

PROGNOSTIC SIGNIFICANCE OF NONPROTEIN NITROGEN AND CREATININE LEVELS*

Highest NPN Reading	Number of Cases	Number of Deaths	Mortality	Highest Creatinine Reading	Number of Cases	No. of Deaths	Percentage Mortality
—45	21	1	4.7	—1.5	24	0	0
46 to 60	9	0	0	1.6-3	19	2	10.5
61 to 80	10	2	20.0	3.1-4	3	2	66.7
81 to 100	6	2	33.3	4.1-5	8	6	75.0
101 to 125	3	1	33.3	5.1-7	7	7	100.0
126 to 150	7	6	85.7	7.1-8	4	4	100.0
151 to 200	8	6	75.0	8.1-10	6	6	100.0
201 to 300	8	8	100.0	10.1+	2	2	100.0
301+	5	5	100.0				

*In preparing this table, patients who did not live as long as four days, and those on whom blood analyses were not made sufficiently often for the trend of the N.P.N. and creatinine to be followed, were excluded. Determinations of chloride and carbon dioxide combining power were not made in a sufficient number of cases to be of statistical value.

*The duration of oliguria was not determinable from the case records of two patients, both of whom recovered.

CAUSE OF DEATH

The apparent causes of death in the 72 fatal cases are listed in *Table 4.* Shock, the cause of almost a fourth of the total number of deaths, occurred only in cases of oral administration. Two-thirds of the patients who died were uremic; most of them presented evidences of such severe gastro-intestinal lesions that these were thought to contribute considerably in causing death. Excluding shock cases, relatively few patients died without uremic manifestations. One patient died after a massive hemorrhage from the bowel.

Table 4

APPARENT CAUSE OF DEATH—72 CASES

Cause of Death	Oral Cases		Vaginal Cases	
	Number	Percentage	Number	Percentage
Shock	15	23.1		
Uremia without G.I. complications	8	12.3		
Uremia with G.I. complications	37	56.9	7	100.0
G.I. pathology without uremia	2	3.1		
Hemorrhage	1	1.5		
Unknown	2	3.1		
Total number	65		7	

DURATION IN FATAL CASES

Of the 65 deaths that occurred following oral administration of bichloride, 13, or 20 per cent,

occurred on the first day; all of these were shock deaths. Eleven (17 per cent) occurred from the second to the fourth day after the poison was taken, 16 (24.5 per cent) from the fifth to the seventh, 19 (29 per cent) from the eighth to the fourteenth, and 4 (6 per cent) later than the fourteenth day.

NECROPSY FINDINGS

Unfortunately, necropsy data was available on only six cases. Necropsies on nearly all the patients who died were not performed in the hospital, but at the office of the coroner; the necropsy findings were thus not incorporated in the case records, and were not available for this study.

The postmortem findings in these six cases are summarized in *Table 5*. It is of interest

Table 5

AUTOPSY FINDINGS*

Organ	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Esophagus	0	0	+++	0	0	?
Stomach	+	0	+++	0	++	?
Duodenum	0	0	+++	0	0	?
Jejunum	+++	0	0	0	0	+++
Ileum	+++	++	0	++	0	?
Colon	+	0	+++	+++	+++	?
Kidney	++	++	+++	++	+	?
Liver	?	+	+	+	?	?
Other pathology	0	0			Serous effusions. Dilat. heart	
Days' duration	5	18	4	8	9	5

*0 signifies normal organ; + slight; ++ moderate; and +++ marked lesions attributable to the action of mercuric chloride.

that no portion of the gastro-intestinal tract was exempt from involvement. Lesions of the colon were no more frequent and no more severe than those in the upper portion of the alimentary tract; gangrene of the small bowel was a prominent feature in three of the six cases. Upper bowel involvement, not usually considered characteristic of acute mercury poisoning (though it has been mentioned by Goldblatt[12] and Ziegler[13]), should, we believe, have an important bearing on the route of administration of fluids to these patients.

THERAPY

General Methods of Therapy.—In reviewing the charts, it was observed that the different general methods of therapy employed could be conveniently and accurately divided into periods of years.

In the first period, 1917-1924, either the Lambert and Patterson method[14] or that advocated by Weiss,[1] or a combination of the two, was employed. Calcium sulphide, as recommended by Wilms,[15] was employed as an antidote in some of the cases.

In the second period, 1924-1930, the general methods of treatment remained the same, except that sodium thiosulphate was introduced as an antidote and administered to nearly all patients, both orally and by vein.

In the third period, 1930-1933, the principal change in therapy was the parenteral administration of fluids to almost all patients. Hypodermoclyses and intravenous infusions (except Fischer's solution) were rarely employed before 1924, occasionally during the second period, almost routinely thereafter. Both glucose solutions and normal saline were given, more of the former than of the latter. Injections of 50 per cent glucose were frequently employed in patients with anuria or severe oliguria.

Twenty-nine "toxic" cases were treated with methods employed during the first period, with 14 deaths, a mortality of 48.3 per cent; 46 by methods in vogue during the second period, with 23 deaths, a mortality of 50 per cent; and 53 by methods used during the third period, with 27 deaths, a mortality of 50.9 per cent. Obviously, the different methods of therapy had no influence on mortality; each was as good, or as bad, as the other.

Sodium Thiosulphate as an Antidote.—Two hundred eighteen of the patients received sodium thiosulphate; 105, or 48.2 per cent, of these developed symptoms of mercury poisoning, and 56, or 25.7 per cent, died. Eighty-four patients did not receive this substance; 38, or 45.2 per cent, developed toxic symptoms, and 16, or 19 per cent, died. Sodium thiosulphate thus appears to have been valueless. This is in accord with theoretical considerations.[16 17]

Influence of Fluid.—*Table 6* shows the mor-

Table 6

RELATION OF FLUID INTAKE TO MORTALITY IN TOXIC CASES

Intake per 24 hrs.	No. Cases	No. Deaths	Per Cent Mortality
Low (1500)	20	15	75.0
Av. (1500-2500)	45	22	48.8
Forced (2500+)	39	11	28.2

Table 7
RESULTS OF OPERATIVE INTERVENTION

Case	Dose (gr.)	Duration at time of operation	Toxicity at time of operation	Operation	Result	Total Duration
1	73.0	3 days	Marked	Bilateral decaps.	Died	5 days
2	? (vag.)	8 days	Marked	Lt. decaps.-cecost.	Died	11 days
3	51.1	2 days	Moderate	Lt. decaps.-cecost.	Died	4 days
4	36.5	27 hours	Moderate	Cecostomy	Died	3 days
5	29.2	—24 hours	Marked	Rt. decaps.-cecost.	Died	2 days
6	21.9	3 days	Moderate	Rt. decaps.-cecost.	Died	10 days

tality, in relation to average daily fluid intake, in 104 "toxic" cases in which this factor could be accurately determined. Irrespective of general methods of therapy and of specific antidotes, the fluid intake bore an important relationship to mortality. The mortality fell with increasing fluid intake. Experimental work of Haskell, Carder and Coffindaffer[18] indicated the value of forcing fluids in bichloride poisoning. Recently, Peters, Eisenman and Kydd[3] have further stressed the importance of an adequate fluid intake.

Operative Intervention.—Six patients were subjected to cecostomy, decapsulation, or both. All of these patients died (*Table 7*).

Surgical intervention was of no avail in this small series of cases. The results of decapsulation correspond with those in the cases collected by Hoffman[19] and by Rosenberg.[20] While cecostomy was not performed immediately in any of the cases, as recommended by Berger, Applebaum and Young,[21] it was resorted to fairly early in four of the patients.

SUMMARY

(1) The case records of 302 patients who had taken bichloride of mercury were studied. There were 72 deaths, a mortality of 23.8 per cent.

(2) About half of the patients developed no signs of mercury poisoning. The mortality in cases of true mercury poisoning was therefore approximately 50 per cent. In most of the patients who recovered after manifesting signs of mercury poisoning, the intoxication was very mild. The mortality in cases of severe mercury poisoning was almost 90 per cent.

(3) Although the average amount administered by vagina was one-third the average dose taken by mouth, the incidence of mercury poisoning was much greater in patients who employed the vaginal route (90 per cent) than in those who ingested the poison (44.2 per cent), and the mortality was higher in cases of vaginal than of oral administration (35 and 23 per cent, respectively). Stomatitis occurred much more frequently following vaginal than oral administration. Shock occurred only after the drug was taken by mouth.

(4) The condition of the patient's stomach at the time the poison was taken, and the state of the drug (undissolved or in solution) were apparently of more prognostic significance than the emesis interval and lavage interval.

(5) Almost all patients who developed any symptoms of mercury poisoning manifested them within 48 hours after the drug was taken.

(6) Anuria and oliguria appeared most frequently early in the course of the intoxication (on the first or second day). The mortality in patients who were anuric as long as 24 hours was 92.5 per cent. No patient with anuria lasting longer than three days survived. Oliguria appearing on the first day, or persisting longer than three days, was a bad prognostic sign.

(7) No recoveries occurred in patients whose blood non-protein nitrogen exceeded 190 mg. per cent, or whose creatinine was above 5 mg. per cent. A N.P.N. above 125, or creatinine above 3, carried a high mortality.

(8) Almost a fourth of the deaths were due to shock. Nearly all the rest were due to uremia, though most of the patients who died exhibited such severe symptoms of gastro-intestinal lesions that these were thought to be contributory factors in causing death. Less than 10 per cent of the deaths were due to other causes than uremia or shock.

(9) Necropsy data were available on only six cases. Lesions of the upper bowel were encountered just as frequently as lesions of the colon in these cases.

(10) Different methods of treatment, em-

ployed at different periods during the sixteen years, had no effect on the mortality.

(11) The incidence of toxic symptoms was just as great and the mortality just as high in cases who received sodium thiosulphate as in those to whom it was not administered.

(12) In 104 "toxic" cases in which the average daily intake of fluids could be determined, the mortality was lowest in the group upon whom fluids were forced and highest in the group whose fluid intake was low; the importance of forcing fluids is stressed by this fact.

(13) Surgical intervention (decapsulation or cecostomy, or both) was resorted to in six cases of severe intoxication. All of these patients died.

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EXPERIMENTS ON SECTION OF THE RUBROSPINAL TRACTS IN THE MONKEY*

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The functions assigned in the literature to the rubrospinal systems are striking because of their number.

Radamaker's[1] conclusion that in the cat and dog the red nuclei are the "centers" essential for the normal regulation of muscle tone and for the execution of certain righting reflexes has conclusively been disproved by the work of Mussen,[2] Ingram and Ranson,[3 4] and Keller and Hare.[5 6]

Clinicians and experimentalists are agreed that irregularity in muscular movement is the outstanding dysfunction which persists following extensive injury to the cerebellum. It is unmistakable that clinical,[7 8 9] experimental,[10] and anatomical literature[8 11] assumes that this coordinating role of the cerebellum is mediated over the superior peduncle. If this is the case, on anatomical grounds alone one would expect that injury to a rubrospinal tract would likewise precipitate muscular incoordination.

Clinically, choreo-athetoid movements[12] and muscular tremors[13 14] have likewise been associated with the release of the red nuclei from cerebellar and higher control as well as with injury to the red nuclei themselves (Benedict's syndrome).

In the light of the foregoing it was a surprise to us to find that in the cat and dog a rubrospinal tract could be severed laterally in the pons without any evidence of irregularity in muscular movements or of static muscular instability. It seemed to us of utmost importance to repeat our experiment on monkeys, since voluntary movement is much more highly developed in this species than in the cat and dog.

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METHODS

The tracts were severed by introducing the blunt end of a needle into the pons from a dorsal approach at the desired position and then pulling it laterally, thus cutting the longitudinal fibers passing in a lateral position in the pons.

The animals were subsequently studied carefully and moving pictures were recorded at various times. At termination the brains were suitably fixed and serial cell and fiber tract series were run for careful study. Our criterion for successful section of a rubrospinal tract was the complete retrograde degeneration of the cells in the opposite large celled red nucleus. Incidentally, we found that the majority of the cells in the ipsilateral small celled red nuclei degenerated whereas the opposite nucleus was unaffected.

RESULTS

We succeeded in maintaining 6 animals to the chronic and prechronic states after pontile lesions were placed.

Muscular incoordination in the homolateral limbs was encountered in varying degrees following seven of the nine successful lesions. The incoordination was characterized by: (1) overreaching or groping for food in a clumsy manner, each attempt being a more or less isolated movement. After the hand succeeded in grasping the food it was moved rapidly in an apparently normal manner toward the mouth, where again overreaching often occurred, the mouth being missed and the nose, eye, cheek, etc., being struck instead; (2) a tremor of the arm, more noticeable in the hand, which appeared as the hand approached the mouth and while the food was held at the mouth. This "intention" tremor varied from fine barely noticeable oscillations to very coarse ones which in one animal simulated closely the isolated clumsy overreaching movements. In mild cases the tremor usually consisted in only one or two oscillations, and appeared only occasionally, for at other times food was placed to the mouth with no evidence of dysfunction.

A summary of the results obtained in the experiments is charted in *Table 1*. It is to be noted from the table that following the left lesions in Monkeys 7 and 12 muscular irregularity was present, but was of short duration and was completely absent following the right lesion in Monkey 12.

Monkey 7 exhibited slight overreaching and intension tremor in feeding for a few days after operation. On the ninth day the arm was used freely with no dysfunction.

The day following the left lesion in Monkey 12 the left arm exhibited rather a marked ataxia in reaching for food, but displayed no ataxia or intension tremor in placing food to the mouth. This dysfunction cleared rapidly, there being no trace of disturbance on the seventh day.

On the first day following the right lesion in Monkey 12 there was no evidence of disturbance in feeding movements. Impairment of function was manifested, however, by an awkwardness in holding food in the hand, by a hesitancy in assuming the upright position, either while at rest or during progression. Also in walking the limbs were placed wide and the forequarters were carried slightly higher than the hindquarters. The following is taken from the protocol:

First Day After Right Lesion.—A. M. Picked up banana immediately with left hand and placed to mouth without any disturbance. When left hand was held, picked up banana with right hand and placed to mouth without any noticeable ataxia or tremor. However, he held the banana in the hand rather awkwardly and dropped it while feeding, as though his grasp were weak. On the second attempt he held the banana with the wrist flexed.

5:30 p. m. The monkey was observed to rest on the dorsum of the right hind limb (like the dog and cat).

Table 1

Monkey	Left Arm		Cerebellar Structures Involved					
Left Lesions	Ataxia	Tremor	Rubrosp.	B. Conjunct.	B. Pontis	V. S. Cereb.	Hook B.	Vest. N.
No. 6	+p	Postural +t	Complete	Complete	¼ ±	Complete	Possible trace	0
No. 7	+t	0	Complete	¾ ±	1/3 ±	Suspected	0	0
No. 8	++t	Spont. +t	Complete	Complete	1/3 ±	Complete	Some	Trace?
No. 9	+++t?	Spont. ++t	Complete	0	0	Complete	0	Some
No. 10	++++p?	Spont. ++++p?	Complete	Complete	¾ ±	Complete	Trace?	
No. 12	+t	0	Complete	½ ±	¼ ±	0	0	0
Right Lesions	Right Arm							
No. 12	0	0	Complete	1/3 ±	¼ ±	0	0	0
No. 8	0	0	0	0	0	0	0	0?
No. 7	++t	0	¾ ±	¾ +	0	Complete	Some	Some

Second Day After Right Lesion.—The monkey is very alert, maintaining righted position at all times, sitting on haunches. However, he has difficulty in keeping the hind limbs flexed for this position in that they seem to slip out along the floor very easily. Yesterday the monkey used the left arm in feeding with a distinct preference to that of the right arm. Today this preference is reversed; he reaches for food readily with the right arm, places it to his mouth without ataxia or tremor. It was noted, however, that occasionally when the banana was some distance away he made several attempts before getting it in his hand (not the clumsy overreaching movements).

Sixteenth Day After Right Lesion.—He is in excellent physical condition, getting wild; is almost back to preoperative level. He walks on all fours in upright position very readily. Has tendency, however, to walk with the hindquarters slightly flexed so that they are carried lower than the forequarters. Although walking is somewhat awkward, there is no tendency to lose his balance. When he runs he has a tendency to leap like a rabbit.

He picks up small individual grains of uncooked rice with the right hand and places to mouth without the slightest disturbance in movement.

One hundred eighteenth day after the right lesion the monkey is in excellent condition. He shows absolutely normal movements during any sort of act.

In another group (left lesion in Monkey 8 and right lesion in Monkey 7) muscular incoordination was present in somewhat more marked degree immediately after operation and persisted over a longer period of time than in the previous group. The disturbance in movement cleared gradually and complete recovery was attained.

In Monkey 6, following operation, a slight ataxia and intention tremor involved the left arm and persisted until death eight and one-half months after the lesion was placed. The arm at times executed feeding movements with no apparent disturbance. The symptoms following operation were only slightly more marked than they were in the chronic state.

Monkey 9 displayed overreaching and intention tremor in a definitely more marked degree and it persisted longer than any of the previously mentioned monkeys. Whether or not dysfunction was still present at the time of death, 70 days after operation, was not certain because of the monkey's refusal to feed when under observation.

The most marked disturbance in movement encountered was in Monkey 10. Although overreaching and intention tremor lessened considerably during the latter part of the animal's postoperative course, irregularities were clearly present just previous to the monkey's death, 95 days after operation.

Static tremor encountered was of two distinct types: one was elicited because of strained posture; the other was apparently spontaneous.

Postural tremor as it was seen involved the arm when holding food in a static position, that is, while holding a banana in the hand during the process of chewing a mouthful taken from it previously. The tremor was not constantly present, but broke through at intervals.

Spontaneous tremor observed by us occurred in the homolateral limbs and made its appearance a matter of days after operation and disappearance after several weeks. It was not present constantly, but broke through at intervals. It was characterized by excursions varying from fine to coarse oscillations. Although it usually appeared when posture was not strained, it was accentuated in certain instances by movement and excitement. In Monkey 10 a tremor was repeatedly seen to break through and involve the left fore limb simultaneously with the use of the right arm in feeding movements. Spontaneous tremor was encountered only in Monkeys 8, 9 and 10, being most marked in frequency of appearance and in duration in Monkey 10, somewhat less so in Monkey 9. It was seen only infrequently over a short period following the left lesion in Monkey 8. It would seem significant that this tremor appeared in the animal exhibiting the more pronounced muscular incoordination.

The rubrospinal tracts were sectioned by all lesions except the right lesions in Monkeys 7 and 8. In the right lesion in Monkey 7, approximately three-fourths of the large cells degenerated. There was no apparent degeneration in the left red nucleus in Monkey 8.

The brachium conjunctivum was completely sectioned by the left lesions in Monkeys 6, 8 and 10, being involved in a varying degree in the other instances.

DISCUSSION

It is readily seen from *Table 1* that the degree and duration of muscular incoordination and static tremor present after operation cannot be correlated with section of the rubrospinal tracts. The left lesion in Monkey 7, the left lesion in Monkey 12, and particularly the right lesion in Monkey 12, demonstrate conclusively that the rubrospinal systems are not essential to normal muscular coordination in movement nor the stability of muscle during rest, that is, as far as incoordination can be determined by observation. In the first two instances, although dysfunction was present directly following operation, it cleared completely in a few days. Following the right lesion in Monkey 12 there was

no irregularity in fine voluntary movement such as is necessary for picking up individual grains of uncooked rice and placing them to the mouth, etc. Static tremor did not follow any of these lesions. In every instance serial section of the mid-brain demonstrated complete absence of the cells in the opposite large celled red nucleus and absence of the majority of the cells in the ipsilateral small celled red nucleus.

It is not clear whether the temporary awkwardness in holding food and the hesitancy in assuming the upright position during progression encountered in Monkey 12 was the result of the absence of the bilateral rubral systems or to section or temporary dysfunction of other structures. For the solving of this question a larger series of animals will be necessary.

It is evident that the superior arm of the cerebellum is not essential for normal coordinate muscular movement and for the static stability of muscle. It will be noted from *Table 1* that the brachium conjunctivum was completely sectioned in only three instances, namely, the left lesions in Monkeys 6, 8 and 10. In Monkey 8 the incoordination was moderate in degree and duration and completely disappeared. Although Monkey 6 exhibited a slight incoordination that was permanent, it was relatively no more pronounced immediately after the operation than it was eight months later. The incoordination seen in Monkey 10 approached that described in previous extirpation experiments on the cerebellum and accordingly that which would be expected on section of the superior arm if coordination were dependent upon the integrity of this peduncle. On the other hand, incoordination was marked in Monkey 9, in which the superior cerebellar arm remained intact anatomically.

In the light of these observations it can be stated that if the coordinating function of the cerebellum on voluntary movement is mediated from its lateral lobes, there of necessity must be an outflow from the lateral group of nuclei other than that over the brachium conjunctivum. That such an outflow is possible has been emphasized by several authors, particularly by Strong.[12] If, however, the lateral lobes discharge only over their superior arms as the work of Mussen indicates, then we are forced to the conclusion that they are not essential for coordinated voluntary movement.

A careful analysis of *Table 1* shows that the incoordination and tremor encountered in our experiments cannot be correlated with destruction of any known anatomical structure. The fact that a mechanism may be rendered temporarily non-functional, probably by adjacent hemorrhage and edema, without actual anatomical destruction, is clearly illustrated in *Table 2*, where the degree and duration of paralysis is compared with the degree of involvement of the corresponding corticospinal tract.

It is readily seen that the amount and duration of paralysis was not proportional to the amount of involvement of the corticospinal tract. The paralysis in Monkey 9, in which about one-third of the tract was severed, was as great as if not greater than that in Monkey 6, in which three-fourths of the tract was destroyed. There was no paralysis following the left lesion in Monkeys 7 and 8, in which the tracts were partially sectioned; yet there was complete temporary paralysis after the left lesion in Monkey 12, in which the tract was barely touched.

When spontaneous tremor was observed it did not appear until a few days after operation, progressively became more intense, then entirely disappeared after the lapse of several weeks. This suggests that its origin was not a permanent deprivation phenomenon, but rather a matter of irritation resulting from lesion debris or a temporary deprivation as result of edema, etc. Its course is strikingly comparable to that of epileptic seizures that occasionally follow extirpation of portions of the motor cortex, in that they also make their appearance a few days following the operation, gradually become more intense, and eventually disappear. Such a localized seizure of the right side of the face occurred in Monkey 6. The first seizure, seen on the third day after operation, consisted of a tic of the eyelid. Later the convulsions involved the whole facial musculature on that side and spread slightly to the opposite side. At their height, they were precipitated by attempting to chew. There was no paralysis of the right side of the face, and histological examination of the brain-stem showed intact facial nuclei.

Table 2

Monkey	Right Arm	Involved by Lesion	
Left Lesions	Paralysis	Cere. Sp.	M. Lemniscus
No. 6	++t	¾±	½±
No. 7	0	¼±	1/3±
No. 8	0	1/3±	1/3±
No. 9	++t	1/3±	0
No. 10	0	1/3±	0
No. 12	+t	Trace	¾+
Right Lesions	**Left Arm**		
No. 12	0	Trace	¾+
No. 8	+p	¾+	Complete
No. 7	+t	0	Trace

SUMMARY AND CONCLUSIONS

(1) The bilateral rubral systems are not essential in the monkey for normal coordination of muscular movements and for static muscular stability.

(2) It is not essential that a brachium conjunctivum be intact for normal homolateral coordination of muscular movements, and for static muscular stability.

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CYSTIC ADAMANTINOMA OF THE LOWER JAW*

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On reviewing the literature one gains the impression that cystic adamantinomas of the jaw are very rare tumors. Only occasional articles have appeared on this subject and usually the report has included only two or three cases. Simmons, of Boston, in 1929, reported twelve cases from his own practice and suggested that these tumors were probably commoner than is usually supposed. This has been the writer's impression; for in the past five years, with a limited practice, we have seen five cases. Two of these cases were small, complete data were not available and they are not included in this report. The main interest in the cases herein reported lies in the unusually large size of two of them. Apparently they are about as large as any that have been reported and are much larger than the cases that are usually seen.

Cystic adamantinoma develops from rest cells of the enamel organ. All parts in the development of a tooth are of mesoblastic origin except the enamel which is due to an infolding of gum epithelium. The development of the enamel organ is analogous to that of a gland. When all of the organ is not used up in the formation of the enamel of a tooth, enameloblastic cells are left deep in the alveolar process and it is from these enameloblastic cells that cystic adamantinoma later develops. Sections of these tumors reveal different types of cells according to the degree of change from epithelium to true enamel tissue. There are three main types of cells representing this transformatory period: (1) cuboidal cells which may present prickles characteristic of squamous-cell carcinoma, which make the diagnosis very difficult; (2) tall columnar cells forming a tumor commonly known as a cylindroma; (3) stellate cells characteristic of the enamel organ.

Grossly these tumors appear to be an expansion of the bone itself. The lower jaw is usually affected and when the tumor is large palpation will reveal soft areas of fluctuation. The cortex may be so thinned out that it presents an egg-shell or parchment crackling to pressure. The tumors usually occur near the angle when in the lower jaw. When the upper jaw is involved, frequently extension takes place into the antrum. The condition is much commoner in females than in males.

Symptoms are usually absent except for the perceptible enlargement of the tumor. Relief is sought usually on account of mental anxiety or disfigurement rather than on account of pain. X-ray examination reveals the diagnosis, though at times it may be very confusing. The characteristic appearance is that of multiple cysts centrally placed in the jaw enlarging at the expense of the cortex. Adamantinomas are frequently mistaken for giant cell tumors. Although these tumors are epithelial in origin and potentially malignant, their course is usually a benign one. Metastasis very rarely occurs and when it does take place it is believed that it is not a true metastasis, but rather an implantation of cells in soft tissue due to incomplete removal. Blump found only two cases of glandular metastasis (reported by Ewing). Frequent curettements or partial removals predispose to malignant changes and metastasis.

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The usual history is of a painless, slow-growing tumor of the jaw. Many minor operations have usually been performed, but recurrence has promptly taken place. Numbers of these cases have been curetted by dentists in the belief that the cavity seen in the x-ray represented an infected tooth socket. Frequently a patient erroneously attributes the onset to the trauma of a dental extraction.

Experience demonstrates that treatment of these cases should be by radical excision. Recurrence with extension and possibly malignant changes always follows curettement. It is wise to remove a section of the jaw bone and make the resection sufficiently wide to go well into healthy uninvolved tissue.

CASE REPORTS

Case 1.—Mrs. B. M., a white woman, aged 28 years, following the extraction of teeth in 1925 began to have a painless swelling of her lower jaw. At this time

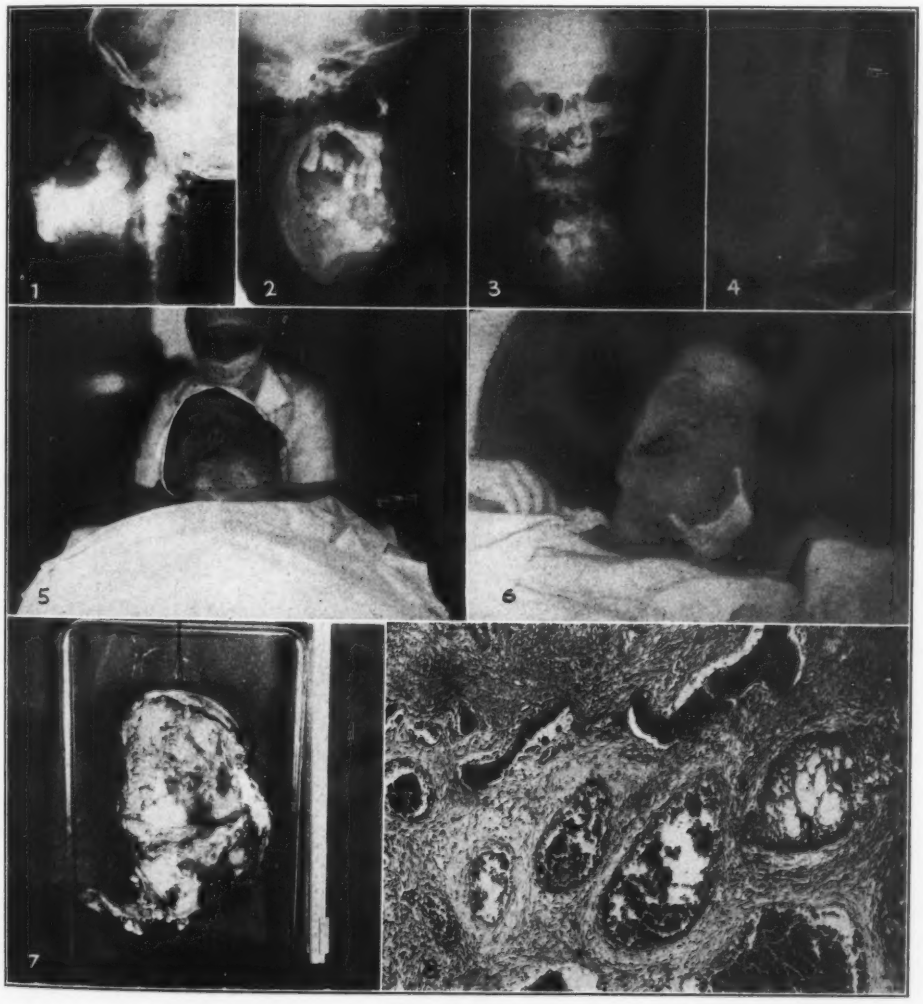

Fig. 1, Case 1

(1) (2) (3) (4), X-rays at various stages during the progress of the tumor growth. Last x-ray made just prior to operation. (5) (6), Patient just before operation, showing her emaciated condition and size of the tumor which prevented her from closing her mouth or swallowing food. (7) (8), Photograph and photomicrograph of tumor removed. Photomicrograph shows a mixture of stellate and cuboidal cells in alveolar-like spaces.

she was 21 years of age. The swelling became progressively worse, but there was no pain. Two years after the onset she consulted a very prominent surgeon of Atlanta, Georgia, who told her the swelling was a cancer, that the condition was hopeless and advised against operation. She kept this impression and advice fixed in her mind through the next five years, and although the tumor steadily increased in size, she refused operative treatment. In 1932 she was admitted to the hospital for operation, but again refused and left the hospital against advice. Finally she came into the hospital May 16, 1933, for operation. Her condition was almost hopeless. The tumor had increased in size till it was considerably larger than a child's head. It had almost entirely occluded the esophagus and the trachea. She was practically starved to death and could scarcely speak above a whisper. The tumor was suppurating and discharging through an opening into her mouth. The stench was terrible. A gastrotomy was done in order to give her nourishment and three transfusions were administered in an attempt to build her up sufficiently to stand an operation. By June 6, 1933, she had improved and an operation was performed after preliminary tracheotomy. The entire tumor and lower jaw on that side were removed. She stood the operation better than was expected, but gradually became weaker and died that night, about eighteen hours following operation. This patient was in an extreme condition and had refused surgical relief until it was too late.

Case 2.—Mr. J. V. A., a white man, aged 38, had noted a slight, painless swelling of the left side of the lower jaw in 1925, when he was 30 years of age. Two teeth had been extracted from this region two years previously. The patient was an ex-service man and received hospitalization through the Veterans' Bureau. He was sent to a Veterans' Hospital in Chicago,

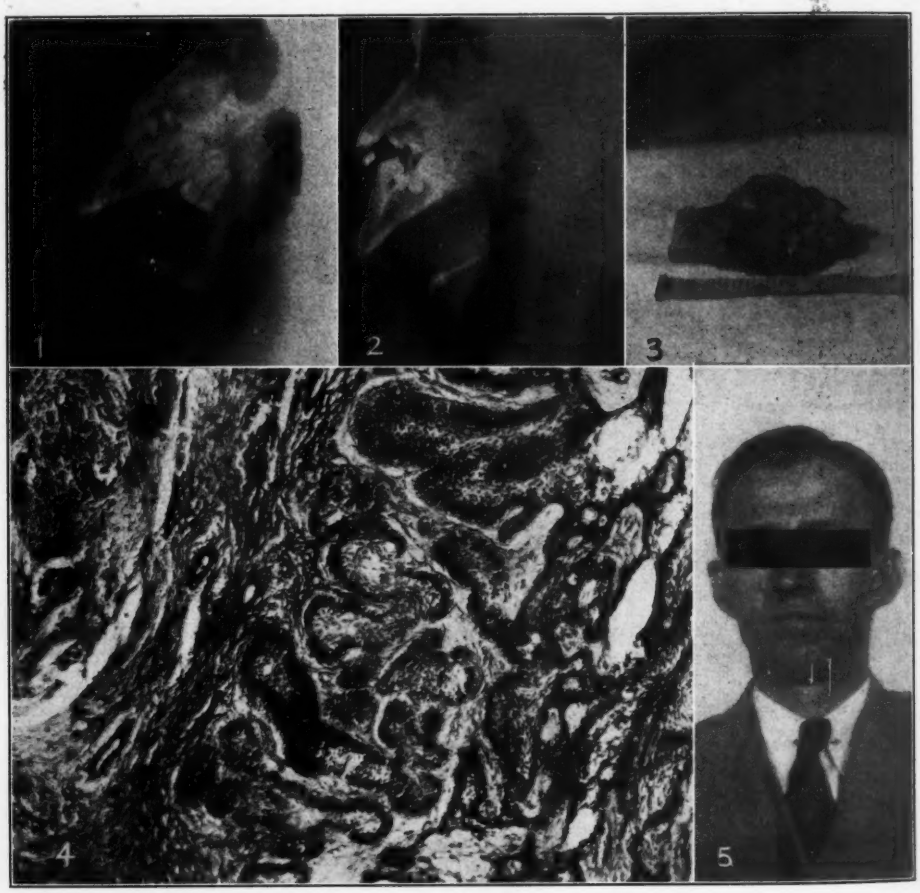

Fig. 2, Case 2

(1) (2), X-ray before and after operation. Complete resection of left side of lower jaw. (3) (4), Photograph and photomicrograph after removal. Photomicrograph shows cylindrical type of cell growth. The patient's history and tumor behavior suggest further trouble. (5), Fair cosmetic and excellent functional result after operation.

where the diagnosis of cystic adamantinoma was made and the tumor removed by curettement. During the next seven years he returned to the hospital eight times for operation and following each curettement the tumor promptly returned. I saw this man at frequent intervals and aspirated fluid from the tumor to give temporary relief. Finally, in 1933, he consented to radical surgery and a section of the jaw was removed, including the tumor and extending well beyond into normal, healthy looking bone. Immediate check-up x-rays revealed that all of the tumor had been removed, but x-rays made six months after operation apparently show recurrence in the stump of the jaw. The pathological sections in this case showed more of a tendency toward malignancy than the other two. This patient may have more trouble in the future.

Case 3.—G. J., a colored woman, aged 25, was first seen in June, 1932. She said that about 3½ years previously she had some teeth extracted, and soon afterward there appeared a painless swelling of her lower jaw. The swelling continued until the tumor was about the size of a small orange. She consulted a surgeon of this city, who attempted to curette the tumor, but could not complete the operation on account of hemorrhage. Rapid enlargement of the tumor followed and almost the entire lower jaw became involved. The lower lip was pulled downward by the size of the mass and the lips could not be closed. Saliva and a foul-smelling discharge dripped constantly from the corners of her mouth. The teeth of the lower jaw were widely separated by the expanding jaw bone. They were loose and infected in their sockets and the

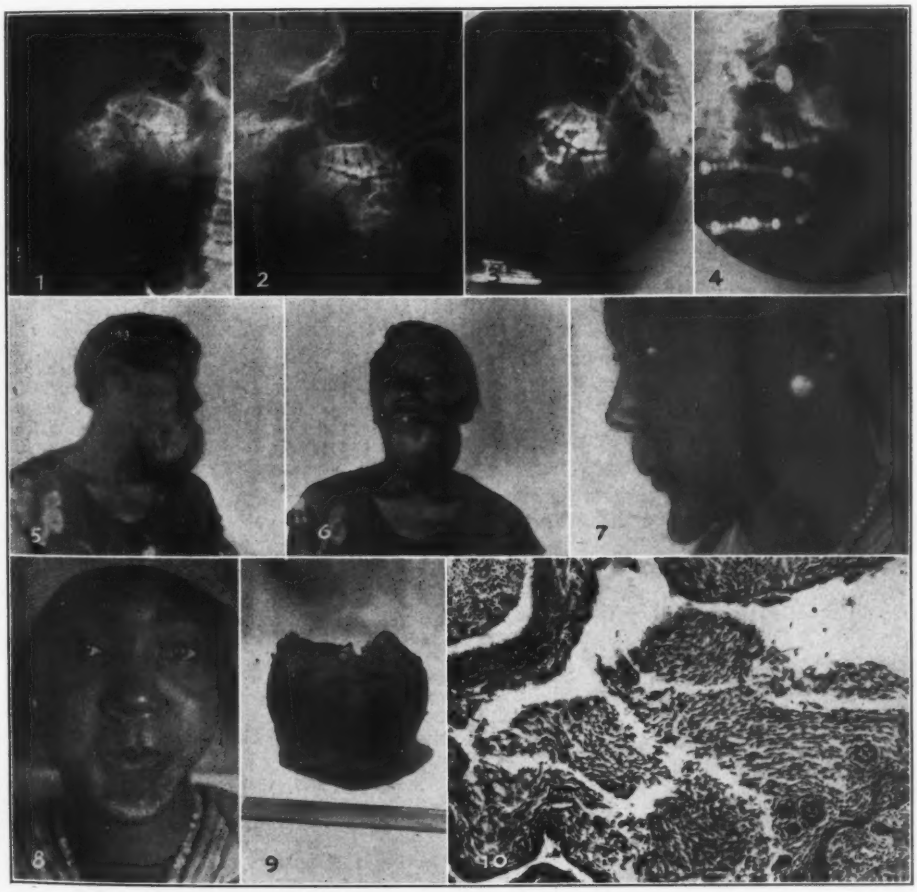

Fig. 3, Case 3

(1) (2) (3) (4), X-rays at various stages during the progress of the disease. The last film made after operation, complete resection of lower jaw. (5) (6) (7) (8), Before operation patient was unable to close her mouth and scarcely able to swallow. Loss of weight from infection and starvation. Able to eat and speak normally after operation. Gain in weight of fifty-four pounds. (9) (10), Photograph and photomicrograph of tumor removed. Photomicrograph shows the squamous cell variety of adamantinoma.

foul-smelling odor of her breath was terrific. She had fallen off from 150 to less than 100 pounds in weight. She could not talk distinctly and could swallow only liquids due to the fact that her tongue was forced by the tumor upward and backward into her throat. Operation was performed June 27, 1932. Sodium iso-amylethyl barbiturate intravenously, supplemented by ether, was used. A curved incision following the line of the jaw was made and skin flaps turned upward and downward. The mouth had to be literally turned upward over the nose and ether was given through the nose, which protruded through the reversed lips. The ramus of the jaw was separated on either side with a Gig'i saw and the tumor completely removed. The tumor was fully as large as a child's head and densely adherent to the under surface and base of the tongue and to the front of the larynx. At the time it was felt that a bone transplant would later be necessary to reconstruct the lower jaw, and it was planned to take a section of the crest of the ilium to do this. The patient immediately began to improve following removal of this large septic mass. She regained control over her lips and could keep her mouth closed. She learned to talk in a perfectly normal manner and twelve months after operation she could eat semi-solid food and had gained fifty pounds in weight. The cosmetic result was not at all bad and she reported that she had a "regular sweetheart." To reconstruct the lower jaw was not felt to be at all necessary.

CONCLUSIONS

(1) Cystic adamantinomas are probably not so rare as is supposed. Three cases with resection of the jaw are reported.

(2) Two of the tumors are unusually large in size.

(3) Complete surgical removal with wide resection of the jaw should be the treatment of choice.*

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Gervais and Pickens Streets

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*I want to thank Drs. Robert E. Seibels and LeGrand Guerry, of this city, for their courtesy in allowing their patients to be included in this report. I assisted Dr. Seibels in the first case and Dr. Guerry operated on *Case 2*. I also want to thank Dr. Henry Plowden, Pathologist, Columbia Hospital, for his invaluable aid in preparing the sections and interpreting their pathology.

DISCUSSION (*Abstract*)

Dr. A. R. Shands, Jr., Durham, N. C.—My personal experience with this condition has been nil. In reviewing the records of the Duke Hospital, it has been found that only three cases of adamantinoma of the jaw have been seen in 31,000 patients examined in the last three and one-half years, and one of these is questionable. This certainly establishes the rarity of the tumor. Two cases involved the upper jaw and one the lower jaw. According to Blump, it is four times more common in the lower jaw than the upper jaw.

The first patient was a colored man, aged 27. He gave a history of having noticed a small mass about the size of the end of his finger at the left angle of his mouth seventeen years prior to admission. The mass was not painful, but grew very slowly and gradually pushed the lower lip out and grew around the gums of the lower jaw. Seven years ago the patient had a radium treatment, following which part of his lower jaw bone sloughed out and the entire mass ulcerated. The mass, however, entirely disappeared after this radium treatment and did not return for three years. For the past four years it has been growing in size and has been ulcerated for two years. There has been a good deal of bleeding at times. Examination shows a rounded ulcerated mass on the lower lip about the size of a large grapefruit attached to the bone. All of the teeth on the left side of his face were missing. All on the opposite side in the upper jaw were pushed in as a result of pressure from the mass. The mass was not tender, was quite firm and stony hard. There was no glandular enlargement in the neck. X-rays showed a complete destruction of the left side of the mandible and a greater portion of the right. Biopsy was done and it was impossible to tell whether this were a sarcoma of fibrous tissue origin or a fibroma. The patient died in the Duke Hospital ten days after admission, before any operation had been done. The cause of death was given as pneumonia. At autopsy, it was found that the mass was covered in its greater portion by granulation tissue and there were areas in the tumor which appeared to be small cysts from which thick greenish, yellow pus could be expressed. It directly connected with the mandible and was quite hard except for a slight softening in the superficial portion. There were varying sizes of areas of bone distributed throughout the tumor. Other areas suggested cystic formation. Microscopic section of the tumor showed groups of epithelial cells separated by fibrous tissue. These were from an oval to a spindle shape. There were varying sizes of cyst-like areas through the tumor. Final diagnosis was adamantinoma.

The second patient was a colored woman of 40 years. She gave a history of having had a lump in the middle of the roof of her mouth for twenty years. This had been operated upon eleven years previously. The growth had become so large that it was definitely interfering with her speech, her swallowing, and was forcing her to breathe principally through her nose. She was suffering no pain. She said that her gums bled very easily and that the mass had doubled in size in the last nine years. The mass filled up practically all of the back of her mouth, extending up into the

posterior nasal pharynx, including all of the uvula, and extended laterally as if it were growing from a tooth socket. The growth was smooth and well rounded. It seemed to be thickest posteriorly. Her tongue appeared to be thick and rather clumsy in talking. X-rays of the sinuses showed distinct haziness over the right antrum. They were otherwise negative. Before attempting to remove the tumor surgically, it was felt that a tracheotomy should be done and both carotid arteries ligated. At the time of operation about 35 c. c. of thick, greenish fluid was first aspirated. It was felt that the central portion of the tumor was probably made up of an infected cyst. Using a diathermy knife, the tumor was dissected free from both the hard and soft palates and removed. It was necessary to open the right maxillary sinus. Dissection extended well down into the pharynx on the right side. The growth seemed to be invasive in character. It was impossible to remove this completely. After removal, the soft palate was reconstructed by suturing together those portions of the pharyngeal pillars which remained. The pathological material which was first removed for biopsy was cartilaginous. This showed the cells to be squamous and spindle-shaped, arranged in typical glandular formation. The tumor itself was rather firm and rubbery and when cut across was seen to contain numerous small cysts. The cells showed mainly epithelioid tissue with some endothelium, arranged in gland-like spaces. There was a question as to whether this was a mixed tumor of the jaw or an adamantinoma.

The third case was a white man, aged 49. He gave a history of having had a swelling in the roof of his mouth for about nine months. Examination showed a tumor of about 4 by 5 cm. in the mouth on the right, which apparently had rather a uniform, firm, rubbery consistency. X-rays showed a definite clouding of the right antrum with no evidence of bone erosion. Some of the tissue was removed for biopsy. The tissue removed was quite friable. Sections of this showed polyhedral cells arranged in the form of multilocular cysts. The cells had the appearance of epithelium. The final report on this tissue was adamantinoma. This patient was advised to have the tumor mass removed, but did not stay for operation.

The works of Mallassez in 1885 and Galippe in 1910 are apparently classical. The theory of origin of these conditions of Mallassez is probably the best, namely: "Atrophied and isolated groups of epithelial cells about the roots of teeth under certain conditions proliferate and give rise to tumors which resemble the structures from which the debris has come." It is most likely that infection and trauma stimulate this debris to new growth. The type of tumor depends largely on the part of the debris which proliferates. There may be all types of cells arranged in masses, in tubules or in cysts. If the deeper tissue proliferates, there may be cylindrical cells or star cells, which are called enameloblasts. Occasionally there may be proliferation of connective tissue with appearance of a sarcoma-like neoplasm. Apparently these conditions seldom metastasize. Ewing has reported cases of metastasis to the glands of the neck and the lungs.

FACIAL AND DENTAL DEFORMITIES DUE TO PERENNIAL NASAL ALLERGY IN CHILDHOOD*†

By RALPH BOWEN, M.D.,
and
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In the study of children and adults who have suffered from perennial nasal allergy during early childhood, we have observed that many have paranasal depressions which give the nose undue prominence. We have also been impressed with the frequency of excessive overriding upper incisors and the V-shaped palate. That facial deformity is common in children and adults who have suffered from nasal allergy is plainly evident to us. The existence of such deformity was first pointed out by Duke.[1] However, he did not mention the common occurrence of dental and palate deformities in these cases. The apparent unusual frequency of facial deformity, protruding upper incisors and a Gothic arch in these patients has encouraged us to study a series of children suffering from perennial nasal allergy, with special reference to such pathology as a probable causative factor in the dental and palate, as well as the facial deformity.

For many years we have observed that chronic asthma in childhood frequently causes gross deformities of the chest. The degree of the deformity depends largely on the age at onset, severity and frequency of attacks, general nutrition and stature of the child. The slender child who has chronic asthma early in life, and continues to suffer, nearly always develops deformity of the chest to some degree. Such deformity is seldom found in children with seasonal asthma. Many asthmatic children also have chronic congestion of the nose, commonly known as "catarrh," perennial hay fever, or vasomotor rhinitis; a better term, we feel, is that of chronic nasal allergy. The nasal symptoms often occur during the first few months of life. There are many who have perennial nasal allergy who do not suffer from asthma. The child with nasal allergy alone, or such pathology as-

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Fig. 1
Nose-rubber. The patient is milk-sensitive. Note the upward stroke.

sociated with asthma, often becomes a "nose-rubber" or a "nose-wrinkler," or both.

SIGNIFICANCE OF NOSE-RUBBING AND NOSE-WRINKLING IN CHILDREN

We have noted that almost all children with chronic nasal allergy develop the habit of rubbing the nose. It is done with a side to side, rotary or upward stroke, the latter being the most common. They are trying to ease an uncomfortable itching of the mucous membrane of the nose which is present a great deal of the time. If such a habit begins early in life and continues over a period of years, a distorted nose is often the result.

When it is not convenient for a child who suffers from an itching nose to use his hand to relieve the symptom, he attempts to overcome the discomfort by wrinkling his nose or twisting his mouth, as shown in *Fig. 2*.

There might be conditions other than nasal allergy that would cause children to develop nose-wrinkling, but it is probably the cause of the majority of these cases. Children suffering from seasonal hay fever often have intense itching of the eyes, nose and throat, and seek relief by rubbing the eyes and nose with the hand and also by scratching the palate with the tongue. Since the period of suffering in seasonal hay fever is of comparatively short duration, no ill effects result either in the form of facial, dental, or palate deformities. Nose-rubbing and wrinkling might be considered a pathognomonic sign of nasal allergy.

FACIAL DEFORMITY

The child who suffers from chronically swollen turbinates due to allergy usually has a congestion of the mucous membrane of the paranasal sinuses, and the openings from the nose into the sinuses are partially or totally blocked with mucus or swollen tissue a great deal of the time. Such a condition would naturally interfere with the normal aeration of the sinuses. It is reasonable to assume that the pathology mentioned would seriously hinder normal development. Dr. Wasson,[2] of the Child Research Clinic, Denver, made roentgenograms of a series of children every four months from birth on through the age of sinus development. He found that those who suffered from a chronic congestion of the nasal and sinus mucous membrane had small undeveloped ethmoids, sphenoids, and antra. Undeveloped ethmoids and sphenoids should cause a depression of the sides of the nose. Diminutive antra should allow a depression of the nasal processes of the maxillary bones. Such depressions would give prominence to the nose and lack of prominence to the cheek, causing facial deformity. Clinical observations show that such facial deformities actually occur in children and adults who have had chronic nasal allergy. The facial deformity is excellent clinical evidence of diminutive ethmoids, sphenoids, and antra.

DENTAL AND PALATE DEFORMITIES

The dental and palate deformities in which we are primarily interested are the excessive overriding of the upper incisors and the V-shaped palate. In describing facial deformity in patients suffering from chronic nasal allergy, Duke[1] states:

> "This type of face differs from that caused by adenoids in the absence of the pinched appearance of the nose, in the lack of prominence of the upper incisor teeth and in the absence of the abnormal mouth and abnormal lower jaw."

Our study of the chronic nasal allergy children has given us information which is indeed at variance with his findings. We agree with him that most of the patients we have observed suffering from chronic nasal allergy since early childhood have evidence, either by roentgenogram findings or by facial appearance, of poorly developed paranasal sinuses. However, many of them with facial deformities which are typical

of those described by Duke have excessive overriding upper incisors and a Gothic arch.

Meyer,[3] of Copenhagen, in 1868, and Tomes,[4] of England, four years later, suggested mouth breathing secondary to adenoids as a cause of the palate and dental deformity we have mentioned. This view was generally accepted until about ten years ago. However, as early as 1879, Kingsley[5] bitterly opposed such a view, and there has not been lack of opposition since. Much has been written and still is being written pro and con, both in England and in this country, concerning adenoids as a causative factor in palate and dental deformities. McKenzie,[6] in 1908, studied 222 children suffering from adenoids and concluded that the presence of adenoids does not interfere with the normal development of the jaw and palate. In 1914, after a study of a series of cases of mouth breathers due to adenoids, Layton[7] stated:

"If, therefore, mouth breathing is sometimes a cause of contracted arch, there must be some other cause at work as well."

The experimental and clinical evidence offered by various workers during the last two decades has caused a large per cent of the orthodontists to reject the adenoid theory.

In 1929, Professor Brash, of the University of Birmingham, England, reviewed in a comprehensive monograph practically all the English literature and experimental work which related to the possibility of mouth breathing due to adenoids as an etiologic factor in dental and palate deformities. He states in his conclusions that

"It is still to be proved that there is any significant correlation between the presence of adenoids and the incidence of deformity of the jaw and palate."

He suggests heredity as the most likely determining factor in the majority of cases.

INCIDENCE OF EXCESSIVE OVERRIDING UPPER INCISORS AND V-SHAPED PALATE

For the purpose of studying the frequency with which excessive overriding upper incisors and the V-shaped palate occur, we made a comparative study of the dental and arch condition of 500 children between the ages of six and fourteen. These were divided equally among the following classes: crippled Children's Hospital cases, white, Indian and negro school children and the same number of consecutive cases of chronic nasal allergy coming to our private Clinic. We found, as will be shown in the table given, that among the white school children there were seven who had a contracted V-shaped palate and what would be considered excessive overriding upper incisors. Of these seven cases, two gave a history of chronic nasal allergy of long standing. Of the 100 children studied at the Hospital, there were only five with the arch and dental deformity. In neither group were we able to study the parents to determine whether or not they had a similar type of deformity. Of the crippled children studied, 20 per cent had their tonsils out, and of the white school children, 16 per cent. Of the Indian and negro children studied, in each group there were four, or 4 per cent, with the palate-dental deformity, and only two, or 2 per cent, who had had their tonsils and adenoids out, although both in the negro and Indian children there was evidence in many cases of excessive adenoid tissue and enlarged tonsils.

In dealing with the Indians in Oklahoma, we have been impressed with their comparative freedom from allergic diseases. One of us (R. M. B.) this summer examined the mouths of a large number of Alaskan Indians of various

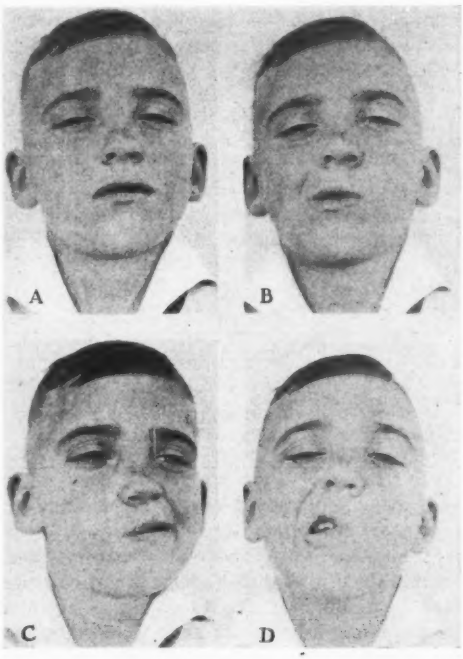

Fig. 2

A patient (same as shown in Fig. 1) with perennial nasal allergy due to milk sensitivity. In "A" note paranasal depression and lack of prominence of the cheek; "B" demonstrates wrinkling of the nose; and "C" and "D" mouth maneuvers as a means of easing the uncomfortable itching of the mucous membrane

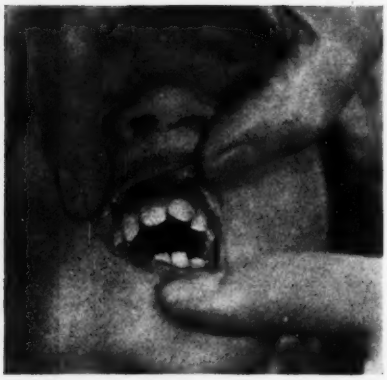

Fig. 3
Case of chronic nasal allergy of long standing. Note overriding of upper incisors is extreme.

tribes, and also the dental condition of a number of Esquimaux. In only one case was there evidence of excessive overriding upper incisors and in no case did we find the Gothic arch. The striking feature of the mouth of the Alaskans and Esquimaux was the dental caries found in children and young adults.

Table 1

INCIDENCE OF EXCESSIVE UPPER INCISOR OVERRIDING AND V-SHAPED PALATE BASED ON A STUDY OF 500 CHILDREN; AGES SIX TO FOURTEEN

	Total No.	No. with Dental Palate Deformity	Per Cent	Per Cent with Tonsils and Adenoids Out
Crippled Children's Hospital cases	100	5	5	20
White school children	100	7	7	16
Children suffering from chronic nasal allergy	100	24	24	56
Indian children	100	4	4	2
Negro school children	100	4	4	2

Of the chronic nasal allergy cases studied, there were twenty-four, or 24 per cent, with the arch-dental deformity and of these 56 per cent had had their tonsils and adenoids out early in life as a means of trying to obtain relief from the wet noses from which they were suffering. The parents of some of our children with the deformity showed a similar condition. Of the twenty-four children with the deformity, similar deformity occurred in either the father or the mother in eight of the cases. Three of these parents suffered from chronic nasal allergy themselves and had suffered since childhood. In other words, there were five cases, or 5 per cent of the total of the nasal allergy group, who seemed to have inherited the deformity.

POSSIBLE ETIOLOGIC FACTORS IN THE PRODUCTION OF THE V-SHAPED ARCH AND THE EXCESSIVE OVERRIDING UPPER INCISORS

From a careful review of the studies of the possible etiologic factors which have been done by both English and American workers, but especially the English, and from our own study, it appears that there are two most probable etiologic factors, which are as follows:

(A) *Inheritance.*—"No one supposes," says Darwin,[8] "that all the individuals of the same species are cast in the same mold."

In review of the cases we have studied, it seems reasonable to believe that inheritance might account for a large per cent of the palate-dental deformities we observed in groups of crippled children, white, negro, and Indian school children studied, but it could hardly account for the frequency with which the deformity was

Fig. 4
A young adult who has suffered from nasal allergy since one year of age. Nasal symptoms due to sensitization to animal emanations and food. Note the depression at the side of the nose, giving undue prominence to the nose. This boy has a Gothic arch and excessive overriding of the upper incisors.

found in children suffering from chronic nasal allergy, as it was five times greater in this series than in the other groups mentioned.

(B) Some type of pathology in infants and children that would interfere with a normal development of the paranasal sinuses.

PHYSIOPATHOLOGIC MECHANISM IN DENTAL AND PALATE DEFORMITY DUE TO CHRONIC NASAL ALLERGY

Many careful investigators believe that sufficient experimental and clinical evidence has not been offered to prove that mouth breathing secondary to adenoids is the cause of the dental-palate deformity which we have described. One of the arguments against adenoids as a possible etiologic factor is the fact that unless there is nasal pathology other than adenoids, the paranasal sinuses develop normally. Normal development of the paranasal sinuses would have a tendency to allow normal development of both face and jaw, which in turn would help to prevent dental and palate deformities.

Many children who suffer from chronic nasal allergy have such pathology during the entire period of paranasal sinus development, and, as has been previously pointed out, in many there is x-ray evidence of lack of development of the paranasal sinuses. The facial deformity which is common in these cases is clinical evidence of diminutive sinuses. Children who suffer from perennial allergy are usually mouth breathers, but, as has been mentioned, mouth breathing in itself does not cause dental and palate deformities. However, in a child with chronic nasal allergy, there are the additional factors of facial deformity and poorly developed paranasal sinuses.

It is generally believed that to some extent the teeth owe their position in the dental arch to the balanced action of the pressure of the lips, cheek, and tongue. In the child with chronic nasal allergy, this balanced action is gone. Mouth breathing over a period of years allows a pushing in of the gum, during the growing age, by the facial muscles, of which the buccinator is the most important. The muscle action would have a tendency to produce a narrowing of the arch, and this in turn would tend to produce excessive overriding upper incisors. The balanced action and the muscle pressure just mentioned is likewise true of children with adenoids who suffer from mouth breathing, but in the adenoid children, the normally developed paranasal sinuses push their way downward and prevent deformity of the arch. In other words, the normal development of the paranasal sinuses which occurs in children suffering from adenoids, has a tendency to prevent dental and palate deformity in spite of the abnormal action of the tongue, lips, and facial muscles. On the other hand, in the nasal allergy child who is a mouth breather, the diminutive sinuses and the facial deformity will allow the abnormal tongue, lip, and facial muscle action to produce the V-shaped arch and the excessive overriding upper incisors which correspond to the "text-book" description of a mouth breather's palate.

CONCLUSIONS

(1) Facial deformity is common in children who suffer from chronic nasal allergy.

(2) Nose-rubbing and wrinkling in children might be considered a pathognomonic sign of nasal allergy.

(3) Excessive overriding upper incisors and V-shaped palate occur in about 5 per cent of the child population. The occurrence of the deformity is four or five times greater in children who suffer from chronic nasal allergy.

(4) The two most probable causes of the palate-dental deformity are: (a) inheritance; (b) some type of pathology in infants and children that would interfere with the normal development of the paranasal sinuses.

(5) It is still to be proved that there is any significant correlation between the presence of adenoids and the incidence of the dental-palate deformity.

(6) It appears that chronic nasal allergy occurring during the age of paranasal sinus development, associated with mouth breathing, is an etiologic factor in excessive overriding upper incisors and the Gothic arch.

(7) Heredity must be considered as an important causative factor in all types of malocclusion.

(8) As a means of preventing the dental-arch deformity, the cause of chronic nasal allergy in infants and young children should be found and eliminated.

(9) Some of the poor results obtained by the orthodontist may be due to the presence of nasal allergy while the corrective work is being done.

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DISCUSSION (*Abstract*)

Dr. St. Geo. T. Grinnan, Richmond, Va.—Rachitic conditions due to lack of proper food are more apt to cause nasal and dental deformity than allergy in children.

COLLAPSED BLADDER SKIODAN CYSTOGRAMS*

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The diagnosis of urologic disorders in elderly men should be planned and executed so as to obtain the maximum information with the minimum of disturbance.

When there is a likelihood, or even a possibility, of the existence of intravesical masses, skiodan cystograms with the bladder nearly empty afford useful information and not infrequently disclose unsuspected lesions.

Depending upon the symptoms, the cystograms are made in the following manner:

(1) If only vesical neck obstructions or bladder tumors are suspected and it is desired to know the size of intravesical masses, a small soft catheter is introduced, all of the urine carefully evacuated, about 7 c. c. of a 25 per cent skiodan solution (made with tablets of skiodan) are injected into the bladder and the film is made with only this small amount of opaque medium in the bladder.

(2) If there are reasons for giving the skiodan intravenously, a 14 x 17 film should be made after the patient has voided. If this film is made low enough to include the entire bladder, intravesical masses of large size may be shown outlined by the shadow of the skiodan urine. If doubt exists as to filling defects or if the patient has so much residual urine that the cystogram is not satisfactory, a soft catheter should be introduced, the bladder emptied, 7 c. c. of 25 per cent skiodan injected and the exposure made.

If the vesical neck is normal the collapsed bladder skiodan shadow is oval, flattened or saucer shaped.

With intravesical prostatic protrusion, the skiodan shadow is seen as an inverted crescent or an irregular shadow overlying the protruding mass.

From films made as above described, the following uropathic information is gained:

(1) Large intravesical masses or bladder tumors, large intravesical protrusions of hypertrophied prostates and prostatic calculi are shown.

(2) Diverticula of the bladder are shown.

(3) Dilatation of the ureters and renal pelves are shown.

(4) A fair estimate of the renal function is obtained by the rate of excretion of the opaque medium.

Such cystograms are not intended to supplant the usual cysto-urethrograms and cystos-

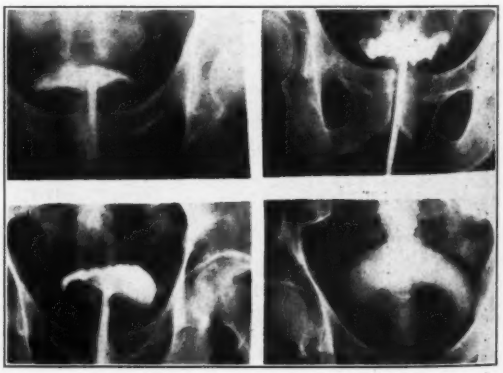

Fig. 1

Upper: Catheter-collapsed-bladder cystograms show that there are no intravesical masses of any consequence and that obstructive bladder neck bar or contraction can be relieved by endoscopic resection.

Lower left: Cystogram shows medium size prostatic hypertrophy (we now withdraw the catheter from the prostatic urethra before making the cystograms).

Lower right: An intravenous skiodan cystogram. The patient voided just before the film was made. The picture shows a small amount of residual urine and a good sized intravesical prostatic hypertrophy.

*Received for publication May 18, 1934.

Fig. 2

Huge prostate without residual urine. Cystogram was made after the patient voided all of the skiodan urine except the small semi-circle shown above the intravesical mass as indicated by the arrows which point to upper margin of mass. The surprising part of this picture is that, in spite of the large size of the intravesical mass, there is no residual urine. Rectal palpation failed to disclose the large size of the intravesical prostatic mass, obviously unsuited to endoscopic resection. The information graphically shown in this picture was obtained without even the passage of a catheter.

copy when needed. The procedure above described is especially recommended in the investigations of elderly men with prostatic obstruction who should be spared all of the disturbing instrumentation that is consistent with the acquisition of sufficient information to determine the type of procedure indicated for the relief of urinary obstruction.

In patients with prostatic obstruction good skiodan films, including kidneys, ureters and collapsed bladder, greatly facilitate an important decision, namely: as to whether the plan of relief should be by transurethral resection or by prostatectomy. These films also show what special measures are likely to be needed to overcome complicating factors. This method is not as good as air cystograms or cysto-urethrograms in demonstrating small intravesical masses and at times adequate data will not be obtained, but usually enough will be gained to indicate what the next diagnostic procedure should be.

Much valuable information is missed in intravenous urography by not having the patient void just before making at least one of the films and by not taking pictures low enough to include the symphysis pubis.

A CASE OF MEGALOGASTRIA AND MEGADUODENUM*

By JOSEPH P. MADIGAN,
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Megalogastria, gastromegaly or "giant stomach" is a condition in which the size of the stomach is out of all proportion to the bodily build of the individual. The stomach retains its normal shape, contour, form, outline, flexibility and mobility, and maintains its intrinsic physiological properties of tonus, peristaltic activity and motility. Anatomically such a stomach is capable of retaining large quantities of ingesta without subjective discomfort. Physiologically it may, or may not, show alterations in gastric tonus or motility.

Ewald,[1] in New York, reports a case of megalogastria with a gastric capacity of 1,680 c. c. which otherwise had a normal gastric function.

The cause may be obstruction to the gastric outflow, which may be either congenital or acquired, and may be extra-tubular, inter-mural, or intra-luminal.

The recorded observations of Agrifoglio,[2] Appelmans, Van Goidenhoven and Boine,[3] Bell and Keith,[4] Bloom and Arens,[5] Bloodgood,[6] Cole,[7] Danna,[8] Didiee,[9] Dyas,[10] Hayes, Shaw, Longview and Walsh,[11] Kellogg and Kellogg,[12] Kantor,[13] Ladd,[14] Nesbitt,[15] Ochsner,[16] Penick,[17] Portis,[18] Quain,[19] Quenu and Jacquelin,[20] Shattuch and Imboden,[21] Soper,[22] Veau,[23] and Hallez, Wilke,[24] and a host of others, are indicative of the thoroughness with which these conditions have been investigated.

The megalic stomach, like its normal counterpart, contains a potential cavity, which adjusts itself to an increase in the volume of its contents. However, in the megalic stomach there is no rest period during which time the gastric cavity is empty. The addition of more food material increases the volume of that ingested hours and days before. Hence when this variety of stomach is emptied by emesis, the amount of material that would completely fill a normal stomach is easily accommodated in less than a third of the megalogastric cavity.

Gastric flexibility is greatly reduced due to the hypertrophy and thickening of the gastric wall. There is no stiffness or infiltration. The

*Read before the Alexandria Medical Society, May 10, 1934, at Alexandria, Virginia. Received for publication August 3, 1934.

Fig. 1

(One hour roentgenogram.) Note violent contractions of second portion of duodenum, "oyster-shell" appearance. Note smooth lower medial margin of third portion of duodenum, proximal to obstruction. Note size and position of stomach and duodenum and their relations to the bony structures. Note small amount of barium in jejunum and ileum.

response to narrow palpation is decidedly limited due to the weight and volume of the contrast media.

The normal but accentuated peristaltic waves of contraction are observed in the early stages of gastric activity, after the stomach has been evacuated by emesis and the contrast media ingested. These normal symmetrical indentations following each other in regular succession soon give way to waves of increasing frequency and vigor which soon become asymmetrical in their distribution. Hyperperistalsis replaces the normal waves which very rapidly become irregular and uneven along the greater and lesser curvatures. As this irregular hyperperistaltic activity continues, the points of origin of the erratic waves recede farther and farther toward the cardiac end of the stomach. The waves are frequently interrupted by spastic incisurae of great depth; by temporary spastic hour-glass contractions; of localized spastic contractions of whole segments of the viscus, principally of the prepyloric region, and by antiperistaltic phenomena. All of these spastic manifestations indicate the vain endeavor toward gastric evacuation. In spite of this violent muscular effort, very little of the gastric content is forced beyond the obstruction into the small intestine. The hour by hour observation will show an almost unappreciable decrease in the gastric content. The conventional six-hour examination is the diagnostic criterion and shows practically a complete gastric retention of the opaque mixture.

The complete absence of gas in the small and large intestines indicates the contracted condition of these portions of the gastro-intestinal tube.

The megalic and the ectatic stomachs have a similar etiological background, namely, obstruction to the gastric outflow. The obstruction differs, however, in onset, degree and duration. In the former the onset is insidious, the degree is slowly progressive and the duration extends over a long period of time, is essentially chronic. In the latter condition the onset is more rapid, with a greater degree of obstruction, and is of shorter duration. The ectatic stomach is essentially the result of seriously impaired gastric motor function. There is almost complete loss of tone of the gastric musculature, the stomach becomes merely a sac, and when filled with fluid, follows the ordinary laws of gravity and hydrodynamics, with a consequent deformity of the normal gastric contour.

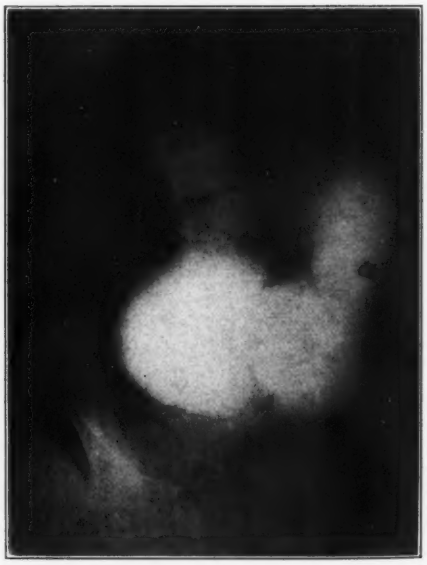

Fig. 2

(Three hour roentgenogram.) Note complete retention in stomach and duodenum at three hours. Note temporary spastic incisura on greater curvature. Note slight increase of barium in jejunum and ileum.

Fig. 3

(Six hour roentgenogram in a case of gastric ulcer, for comparison.) Compare with Fig. 4. This is a six hour picture of a case of gastric ulcer. Note position and size of stomach and its relation to the bony structure; also distribution of barium throughout the coils of the small intestine (individual was of the same height and weight).

Megaduodenum or giant duodenum is a uniformly enlarged duodenum.

In the case for presentation the hypertrophy and enlargement of the duodenum were due to obstruction of the third portion, at, or in the vicinity of, the site of crossing of the superior mesenteric vessels and the root of the mesentery of the small intestine. The site of obstruction in relation to the ampulla of Vater is important, as will be discussed later.

The history of a case of megalogastria and megaduodenum follows:

The patient was a colored man, a clerk, aged thirty years, weight one hundred and thirty pounds, height five feet eight inches. He showed pronounced protrusion of the abdomen, but no palpable masses. His chief complaints were dietetic excesses, epigastric pain, irregular periodic vomiting and severe constipation. The conditions were of long standing, in fact, reached as far back as he could remember. Voluntary bowel movements were unknown to him; relief by enema was the rule. The stools were small and contained many hard, dry scybala, which were painful to expel. Vomiting relieved the pain temporarily, and he was free from pain as long as the stomach was empty. The vomiting material was foul smelling and greenish in color. Vomiting at first was involuntary, but the subject soon learned to evacuate his stomach by the finger route when the pain became excessive, or the foul taste in his mouth and fetid breath became obnoxious even to himself. After voluntary emesis he would drink large quantities of water, then re-evacuate it, in this way effectively washing out the stomach. It was necessary to repeat this procedure every other day. His diet was of the ordinary variety, although excessive in amounts, at each sitting. There was no history of any definite increase or loss in weight.

Roentgenoscopic examination disclosed an enlarged reversed "L"-shaped stomach occupying the left hypochondrium, left lumbar, left iliac, the hypogastric and right iliac regions of the abdomen, and extending into the epigastric and umbilical regions. The thickened walls of the stomach were visible without the aid of contrast media.

There was marked increase in the size of the gastric cavity. Two liters of barium mixture were used to fill the cavity. Canalization was wedge-shaped and retarded, gradually forcing its way into the depths of the cavity. The gastric musculature was markedly hypertonic. There was hyperperistalsis of the irregular type, noted especially on the greater curvature, accompanied by vigorous antiperistalsis. There was an initial cardiospasm; there were temporary spastic hour-glass contractions; numerous spastic incisurae of great depth, and violent localized spastic contractions, especially of the prepyloric antrum. There was a prolonged pylorospasm, which upon relaxation disclosed a sphincteric canal of broad dimension. The stomach was freely movable between the points of suspension, considering its huge bulk. Flexibility of the wall was considered normal in view of the thickening and hypertrophy. The gastric motility was almost at a standstill except

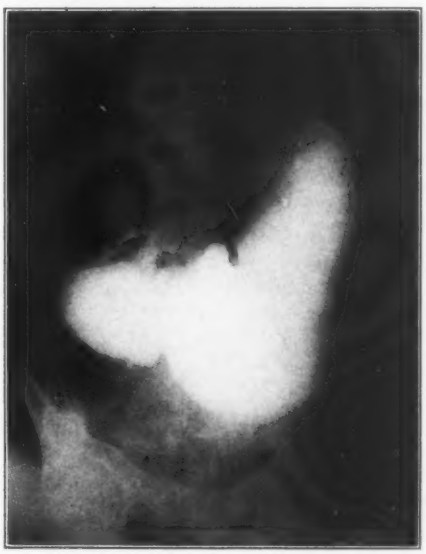

Fig. 4

(Six hour roentgenogram.) Compare with Fig. 1. Note stomach filled at six hours. Also small amount of barium in small intestine. Compare with Fig. 3.

for the escape of a small number of barium flakes into the proximal portions of the jejunum.

Duodenum.—The duodenum retained its infantile ring-shaped form. The normal triangular or "bee-hive" shape of the duodenal cap was replaced by a ballooned out cylindrical tube with hypertrophied walls. The outline was regular except for indentations caused by the spastic contractions of the duodenal musculature. The first portion of the duodenum was placed to the right of the fourth and fifth lumbar vertebrae. The duodenal angle or second portion was placed for the most part within the cavity of the pelvis, in the right iliac fossa. The sharp rounded lower margin of the ballooned out duodenum was readily observed. Violent contractions of the duodenal musculature forced the barium forward against the obstruction and backward into the pyloric antrum.

Roentgenographic examination confirmed the previous findings. Of particular interest is the violent localized spastic contraction of the prepyloric antrum, with complete obliteration of the antral cavity. Between the body of the stomach and the duodenum a few transverse strands of barium enmeshed between the hypertrophied gastric rugae are seen, in the position of the gastric antrum, and crossing these at right angles is a narrow ribbon of barium indicating the stenotic lumen of the third portion of the duodenum. Also of interest is the "oyster-shell" appearance of the contrast media in the descending portion of the duodenum. The alternate light and dark bands indicate the narrow strands of barium interposed between the valvulae conniventes, respectively. The small amount of barium forced through the stenotic lumen of the third portion of the duodenum is indicated by the small opaque areas in the contracted jejunum.

The three- and six-hour examinations both roentgenoscopically and roentgenographically showed little change in the barium content of the stomach and duodenum; there was slightly more barium in the jejunum and proximal portions of the ileum. The subject involuntarily evacuated the gastric contents, so that further examination of the stomach was precluded. The twenty-four-hour examination shows a few flakes of barium strung out along the colon, principally in the pelvic cavity.

COMMENT

From the roentgen examination it is apparent that the minimal amount of intestinal digestion, intestinal absorption and intestinal elimination, take place in or through those portions of the intestinal tube distal to the site of obstruction. It is also evident from the history and the physical inspection that the subject was fairly well nourished. The question arises: how was he able to maintain this equilibrium in the face of such interference with the normal digestive, absorptive and eliminative functions of the small intestine? The answer to this question must obviously be in the site of obstruction. The obstruction to the gastric outflow was situated in the infra-ampullary portion of the duodenum, that is, it was distal to the openings in the duodenum of the common bile ducts and the pancreatic duct or ducts. The portions of the duodenum proximal to the obstruction contained, therefore, the secretions of the abdominal accessory organs of digestion as well as the secretions of the duodenal or Brunner's glands. These secretions are necessary for intestinal digestion. Furthermore, the enlarged and hypertrophied proximal portions of the duodenum greatly increased its absorptive area. Hence it would seem that this portion of the duodenum took over in great part the digestive and absorptive functions of the remaining and almost functionless portions of the small intestines.

Elimination of waste products proximal to the site of obstruction takes place by the gastro-oral route. The regurgitation of the duodenal contents into the stomach is by no means unusual and is considered by Bolton and Salmond,[31] in London, to be physiological, and to tend to regulate the gastric acidity.

As to the bacterial flora of the intestines in cases of partial obstruction, Melaney, Berg and Jobling,[32] in New York, in experiments on dogs, found that there was an enormous increase in the number of organisms above the obstruction, with a marked decrease in the number of viable organisms below the obstruction. The greatest increase in numbers was noted in the *Bacillus coli* groups. This marked increase persisted in some cases; in others there was a subsequent decrease, even though the obstruction remained.

Several attempts have been recently made to destroy the identity of the duodenum. Cole[33] considers the first portion of the duodenum as a part of the stomach. Vespignani[34] considers the subvaterian portion of the duodenum as the beginning of the small intestines. Without entering into a discussion of these novel views, which practically eliminate the duodenum as an anatomical entity, it is sufficient to state that they are in direct opposition to the views of Hunter,[35] in London, who asserts that the duodenum is not only a distinct anatomical entity, separate from the stomach and small intestine, but has a separate embryological development and is prone to variation without involving other parts of the intestine.

SUMMARY

The terms megalogastria and megaduodenum should be restricted to indicate a uniform enlargement and hypertrophy with preservation of the normal outline and contour of the stomach and duodenum, respectively, and should not include dilatation without hypertrophy.

In the case reported, partial infra-ampullary

duodenal obstruction was not incompatible with life.

Intestinal digestion and absorption took place principally in the enlarged and hypertrophied proximal portion of the duodenum.

Intestinal elimination proximal to the obstruction was accomplished principally through the oral route.

High unrelieved partial chronic intestinal obstruction, below the ampulla, is less serious than obstruction in the jejunum and ileum, due to the possibility of elimination by the oral route.

The anatomical entity of the duodenum must be admitted.

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Farragut Medical Building

A SIMPLIFIED COUGH-PLATE METHOD FOR THE EARLY DIAGNOSIS OF WHOOPING COUGH*

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In March, 1934, the City of Greenville, South Carolina, was visited by its first severe epidemic of whooping cough in a period of over ten years. Owing to the extreme prevalence of respiratory infections among little children this year, on account of an unusually cold and rainy winter, there were many bronchial infections. Both physicians and mothers were little aware of the possibility of a widespread epidemic of whooping cough. However, in a few weeks many of these cases of bronchitis and coughing were obviously whooping cough clinically. There was a crying need for a simple, practical method for a quick diagnosis. In an endeavor to answer this question, we have studied ninety different cough-plates, the work extending over a period of more than three months.

McLeod[1] believes that the bacteriological diagnosis of whooping cough, if generally adopted, would probably be found to be easier and more exact than that of diphtheria.

Battley[2] has remarked that in spite of increased knowledge of the cause, prevention and treatment of infectious diseases, whooping cough remains the great scourge of infancy and an important cause of severe illness and death throughout childhood. According to Gundel and Schlueter,[3] it kills more children than measles, scarlet fever and diphtheria together.

MacDonald and MacDonald[4] endeavored to show that whooping cough is caused by a filtrable virus. They came to the conclusion that a filter passing virus plays no role in the etiology of pertussis; that the disease is caused by the bacillus of Bordet and Gengou, and active immunity is conferred by the injection of *B. pertussis* vaccine.

Kendrick and Eldering[5] report that six thousand deaths attributed to whooping cough occur in the United States each year. Most of these include children under five years of age. In the State of Michigan deaths under five years of age followed whooping cough thus: in 1929, whooping cough led with 250 deaths; in 1930,

*From the City Health Department. Received for publication August 17, 1934.

whooping cough was second, causing 171 deaths; in 1931, it led again with 183 deaths; in 1932, whooping cough again stood in first place, causing the deaths of 193 infants and young children. It continues to be one of the leading causes of death of children, because its severity has not been fully realized, and because, by the crude method of diagnosis of waiting for the characteristic whoop to develop, fully two weeks of the most communicable stage of the disease have passed, during which period many infants and children have been needlessly exposed. Because of the complicated technic of preparation of the old culture media, bacteriological diagnosis of this serious disease has not been encouraged in bacteriological laboratories.

Culture Media.—The effective, but slow, cough-plate methods have not been used to the best advantage by the practicing physician. The culture media used at present contain glycerin and potato as two of the principal ingredients. The purpose of glycerin, a hygroscopic agent, in the formula, is to fix and hold the moisture necessary to bacterial growth, while the potato serves to enrich the culture medium. But glycerin is a preservative and inhibitor of bacterial growth. It possibly inhibits the growth of the colonies of *Bacillus pertussis,* thereby delaying the diagnosis of whooping cough.

If we refer to the standard text-books on bacteriology seeking a formula for the preparation of a suitable culture medium for the Bordet-Gengou bacillus, we find that the technic is very complicated, requiring almost a whole day's time of one skilled worker. Furthermore, using this antiquated culture media, fully forty-eight hours must elapse before even the slightest growth of colonies of *B. pertussis* is observed. In addition to the great amount of patience and effort in making the culture media, and the time required for the colonies to develop, frequent inspections of the cough-plate must be made.

Because of the possible inhibiting effect, glycerin was left out of our culture media. Ordinary nutrient agar was used enriched with potato or turnip extract. The proportion is 10 c. c. of nutrient agar to 5 c. c. of this extract. The nutrient agar has the following formula:

Water	1 liter
Beef extract	3 grams
Peptone	5 grams
Agar	15 grams

Adjust to pH 6.7.

For the potato extract, 3 or 4 medium sized Irish potatoes are peeled and cooked in about a quart of water for half an hour. This is filtered through cotton and autoclaved, then added to the nutrient agar.

The filtered extracts are perfectly clear and mix thoroughly with the agar.

Identification of the Bacillus.—McLeod,[1] who made many important observations on the cultural characteristics of the Bordet-Gengou bacillus, noted:

"(1) *B. influenzae* grows quickly; *B. pertussis* grows slowly.

"(2) The appearance of the colonies on Bordet-Gengou medium are quite distinct; those of *B. pertussis* being quite unlike those of any other bacterium that is commonly found in the sputum, and therefore the bacteriological diagnosis can frequently be made by inspection of the plates alone."

Our findings agree with his.

Kendrick and Eldering[3] describe the macroscopic appearance of the colonies of the Bordet-Gengou bacillus.

"By transmitted light, colonies are smooth, raised, glistening, pearly and almost transparent, while colonies of the gram-positive cocci in general appear duller, darkly colored and opaque."

Gundel and Schlueter[3] quote Kusua Arimichi as differentiating *B. pertussis* and *B. influenzae* by staining with a 0.0001 per cent solution of Nile blue sulphate. With this reagent the influenza bacillus is unstained, whereas the whooping cough bacillus stains readily.

The plate is held about six inches from the patient's mouth and the child is allowed to cough directly on the congealed agar in the dish. The plate is then placed in the incubator at the usual temperature, bottom up, to minimize evaporation. At the end of twenty-four hours, if it is observed only casually, the typical small, very nearly transparent colonies of the Bordet-Gengou bacillus are seen. A platinum loopful of water is placed on a clean glass slide in two places or two slides may be used. With the loop organisms are transferred from the most typical colonies to the droplet of water and thoroughly emulsified. The specimen is dried, fixed in the flame, stained in 1:5,000 bismuth-violet for three minutes and examined under the microscope with the oil immersion objective.

The Bordet-Gengou bacillus is stained a deep purple with bismuth-violet and appears as a short, stubby bacillus in sizes varying from 2.5 to 5 micra; coccoid forms are always present and are seemingly very young organisms. Although the bacillus may vary somewhat in size, it is always the same in form in fresh cultures.

Old bacilli appear as rather slender rods after about ten or twelve days.

It was our routine practice to make the smears for examination at the end of twenty-four hours. Often we made them before the lapse of this time if the clinician or mother was very anxious for a diagnosis. At the end of this time, using the simplified culture medium, isolated or discrete colonies of *B. pertussis* are about 0.5 mm. in diameter. If there is a tendency for the colonies to be conglomerate, then, of course, they are much smaller, about the size of a pin or needle point. If there is a strong tendency to conglomeration of colonies, a sweep across about 1 or 2 cm. of surface of the agar with the platinum loop is sufficient to get enough organisms for microscopic examination.

In order to determine the shortest possible time required for the colonies to make their appearance, a fresh potato extract nutrient agar plate was inoculated with a pertussis colony which had been obtained by the cough-plate method. The inoculation was made at 10:00 a. m. and at 3:45 p. m., five hours and forty-five minutes afterwards, very minute colonies could be seen. Examination of these revealed the characteristic bacilli.

Although the appearance of the pertussis bacillus was very uniform in staining and form, there was quite a variation in size. The microscopic agglutination method, using one drop of bacillus emulsion in water to one drop of pertussis agglutinating serum, 1:400 (Sharp & Dohme) was used in the majority of cases, and always when we were doubtful about a smear. Sufficient time was taken to study the hanging drop thoroughly before the serum was added. Agglutination of the organisms occurred within ten minutes.

The physicians who referred their cases to us for study reported that the clinical course of the disease was typical in those children found to be positive, although there were two abortive cases, whose cough-plates were positive. Using the simplified culture medium, we were able to make a positive diagnosis as early as the fifth day of the cough. During the pre-whooping period, it was generally found that the sputum was full of the micro-organisms.

Of the ninety cough-plates studied, forty-nine were positive for the Bordet-Gengou bacillus.

SUMMARY

Whooping cough as the cause of death in young children holds a prominent place in all tables of mortality statistics.

The older culture media for use in cough-plates are difficult to prepare and permit only slow growth.

Our simplified method of preparing the culture by using potato-extract or turnip-extract nutrient agar permits diagnosis within twenty-four hours. The minimum time in which growth became visible on this medium was five hours and forty-five minutes.

The micro-organism was stained with bismuth-violet and microscopic agglutination tests were employed in identifying it. Our observations and results with ninety cough-plates are described.

ACKNOWLEDGMENTS

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Skyline of Down-Town San Antonio.

SAN ANTONIO—WHERE WE MEET

SAN ANTONIO WELCOMES SOUTHERN MEDICAL ASSOCIATION*

All San Antonio will join with the medical fraternity in extending a hearty welcome to the members of the Southern Medical Association who attend the annual convention November 13 to 16.

San Antonio is a two-hundred-year-old city with an Old World atmosphere. The inimitable Will Rogers, on the occasion of a recent visit, said: "San Antonio is the city where beauty and tradition have been preserved."

A settlement was established at the present site of San Antonio as early as 1689 by Spanish troops and Franciscan monks exploring this territory for the King of Spain from their headquarters in the New World at Mexico City. Since that time it has been the seat of political government and religious exploitation for Spanish and Mexican governments. The King of Spain granted a charter to the city in 1731. The spire of San Fernando Cathedral, which was constructed in that year, was designated as the center of the city with its boundaries to extend as a square three miles in each direction from that point. The city limits thus established are still the city limits of San Antonio.

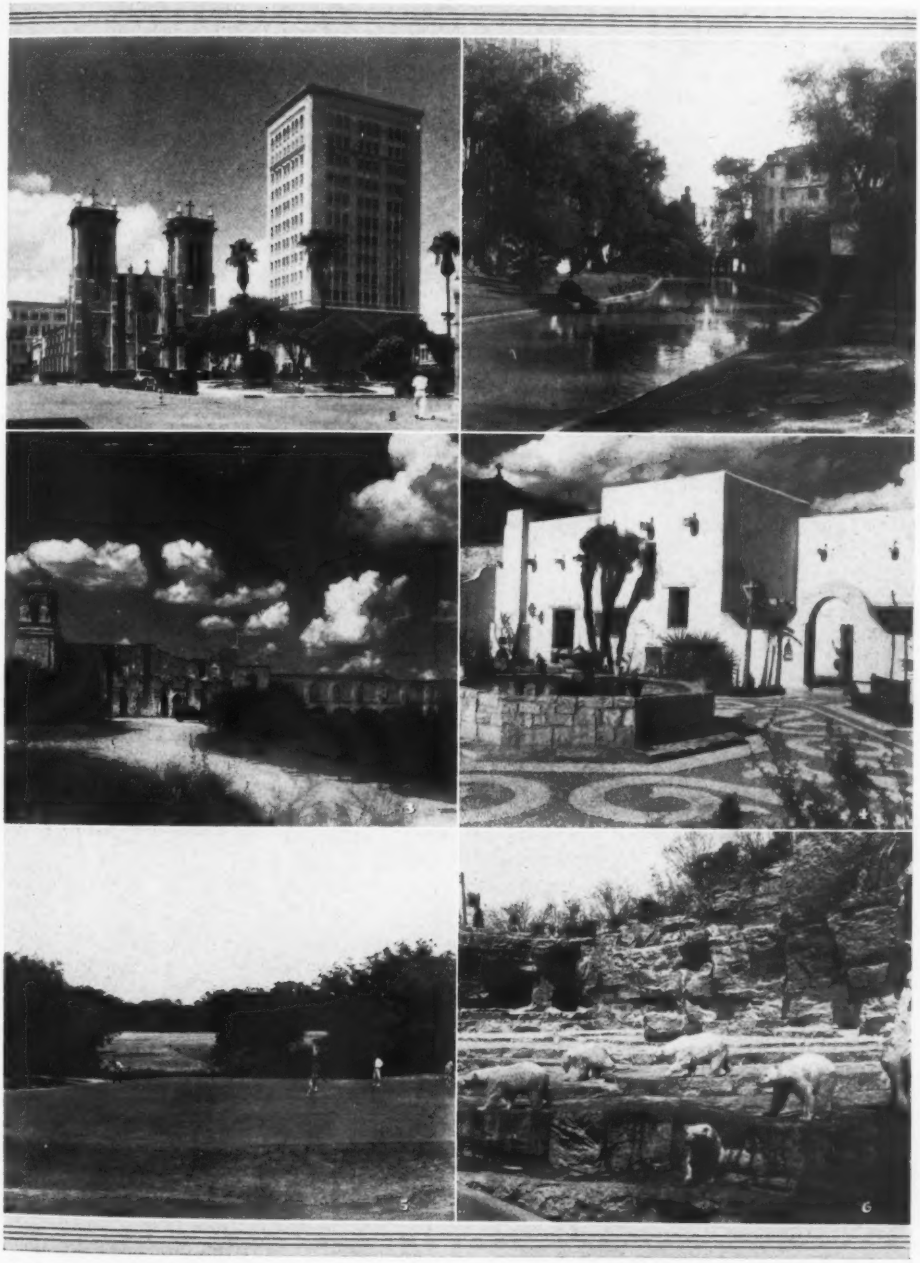
Home of the Bexar County Medical Society, San Antonio.

The Franciscan monks, in 1718, officially established the Mission fortress known all over the world today as the Alamo, and known then as the Mission San Antonio de Valero. This was followed by the more pretentious structure, the Mission San Jose, situated south of the city limits, which is famous for its rose window and contains the original carved statues and paintings sent to America by the King of Spain and brought through the wilderness by the Franciscan fathers. During 1730, the three missions of San Francisco de Espada, San Juan de Capistrano and Concepcion de Acuna, which had been established during the last decade of the Seventeenth Century in East Texas, were removed to San Antonio and rebuilt. The Alamo is known throughout the world as the shrine of Texas liberty, because it was used as a fort by the Texans during the struggle for Texas independence against the Mexican Government in 1836. This shrine and the other four missions have been the Mecca for thousands of tourists each year. At the present moment work is progressing rapidly on the construction of a park adjoining the Alamo, made possible by the purchase of business property by the State of Texas.

The organization of patriotic Texas women, known as the Daughters of the Republic of Texas, has been responsible for the preservation and beautification of the Alamo. Work is also in progress now and nearly completed on the restoration of the quadrangle and buildings which originally surrounded Mission San Jose. The new highway No. 66, to be known as the Mission Road, extending from the northern to the southern boundary of Texas, will pass these historic missions.

The nucleus of the civic population of San Antonio was the settlement here in 1731 of fifteen Spanish families from the Canary Islands. After Mexico had gained its independence from Spain, San Antonio was its most important outpost north of the Rio Grande. The influx of American colonists rapidly made San Antonio

*Prepared by Mr. Howell W. Jones, Secretary, Convention Department, San Antonio Chamber of Commerce, San Antonio, Texas.



1. San Fernando Cathedral and Frost National Bank Building facing a public plaza—the very old and the very new. 2. San Antonio River winding its way through the down-town business section. 3. The Mission of San Jose, 1778, "the finest mission in all New Spain." 4. Spanish Governor's Palace. 5. Willow Springs Golf Club. 6. Barless bear pits in Brackenridge Park.

more and more important. San Antonio was the site for meetings in 1834 to discuss Texas independence from Mexico. Actual warfare between Texas and Mexico began shortly afterward and the siege of the Alamo, ending in defeat and death for the entire band of Texas heroes, established its place in the great epics which mark world history of the struggle for freedom.

San Antonio retained its importance as a city of the Republic of Texas, and since 1845 has been one of the most important cities in the State.

It is the commercial center for that vast empire known as South Texas. With its almost tropical climate it is the natural destination for many thousands of people who are looking for a place to spend their lives in peace, contentment and happiness, where health goes hand in hand with prosperity.

San Antonio is not a city of excessive personal wealth. The population as a class are home owners, living in pretty cottages surrounded by space, sunshine, light, air, green lawns, beautiful flowers and shrubbery. The homes of the wealthy cannot be surpassed in any city for achitectural beauty, with spacious grounds carefully and beautifully landscaped.

The stranger coming to San Antonio is impressed with the apparent lack of poverty. People in San Antonio, from the common laboring class, represented by the Mexican peons, to the successful business man, live within their means and they enjoy earned incomes which supply their daily needs.

The winters in San Antonio are mild and spring-like. When the breath of a norther blows in from the cold, icy north, the glorious rays of a golden sun soon turn a chilling atmosphere into a balmy, glorious day. In winter time people do not wear heavy woolen clothing. Overcoats are scarcely seen on men; high top shoes are never worn; women wear spring sport ensembles, light woolens and silk.

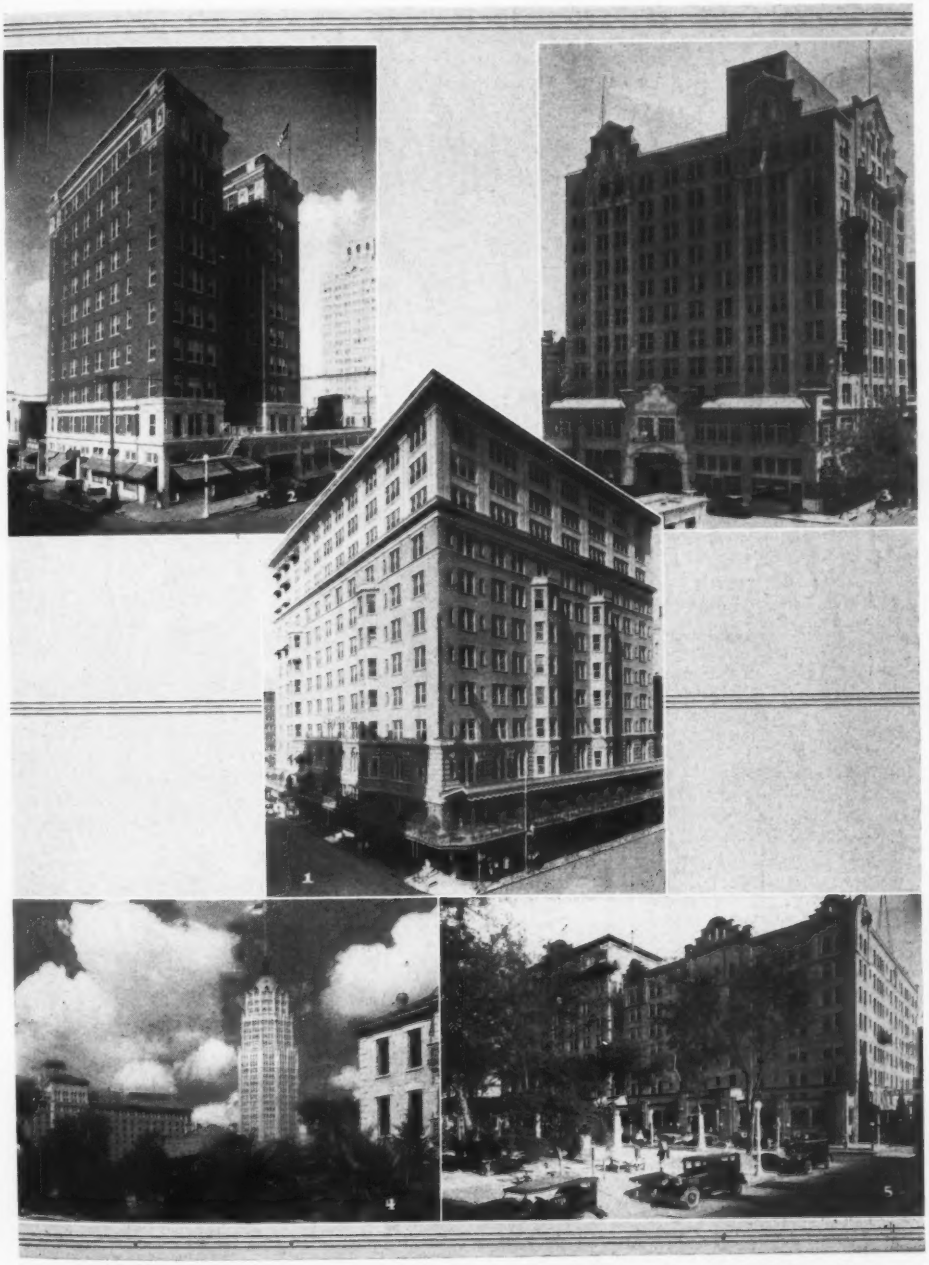
A winter in San Antonio with its setting of green grass, shrubbery, waving palms, ligustrum trees, majestic live oaks, mountain cedars, privet hedges, blooming roses and bright-colored flowers is more like a spot in a Garden of Eden than just another American city. One of the glories of a winter in San Antonio is its perpetual sunshine and a sun whose health-giving rays penetrate deep into one's memory.

The summers in San Antonio are not only livable, but they are delightful. The sun is hot, but no hotter than it is in the North and East. The atmosphere has no humidity and no one feels the heat. A cool breeze blows continuously over the country, the gulf breeze, which has no chill in it. At night the atmosphere is so clear that the starlight is like twilight and the moon is brighter than the dawn of day.

There is an average rainfall of 27 inches, without a rainy season. Rubber shoes and umbrellas are unknown.

San Antonio has a blessing in its water supply which no other city has. The water is subterraneous, coming

1. Municipal Auditorium. 2. Public Library. 3. The Alamo and Medical Arts Building and Hospital. 4. Nix Professional Building and Hospital.



Some of San Antonio's good hotels. 1. Gunter. 2. Robert E. Lee. 3. Blue Bonnet. 4. Plaza and Smith-Young Tower near by. 5. St. Anthony.

from an artesian belt, the coolest and purest water God ever gave to a people. The city water supply is connected directly to flowing wells and never sees the light of day until it flows out of a water faucet. There is a well in San Antonio, which has a capacity flow of thirty-five million gallons a day.

San Antonio is a beautiful city with well paved streets, many parks, golf links, zoological gardens, a museum, polo fields, tennis courts, bridle paths for horseback riding and many points of interest.

Paved roads and highways radiate in every direction from San Antonio. Thirty miles north and west is mountain scenery with some of the grandeur of Colorado. To the south and west is ranch country, some of the ranches containing over a million acres. It is only a three-hour drive to the Gulf of Mexico, with beautiful bays for boating and fishing. This is the fisherman's paradise. Tarpon and king fish will keep the fisherman busy in the bays, and if these prove tame, he can go out into the gulf and get sharks or fish of any size. It is nothing to catch several hundred pounds of trout and red fish in one day's fishing in the bays. Wild duck and geese spend the winter here by the thousands. Doves, white-winged pigeons, quail, both Mexican quail and bob whites, wild turkey and deer are plentiful. Rabbits and squirrels are too common to shoot. If the hunter wants big game, he is not far from panthers, bob cats, Mexican lions and bears.

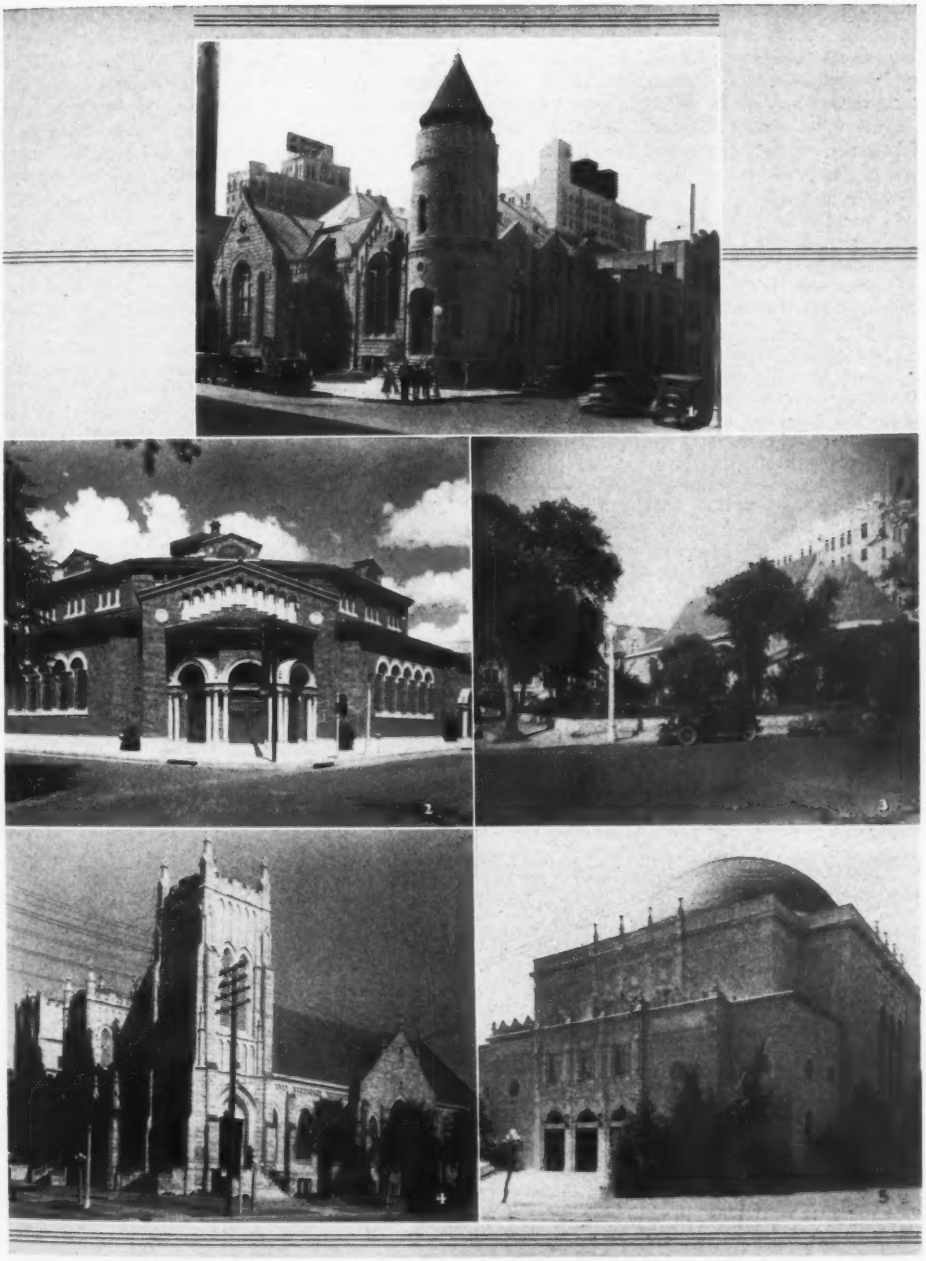
Just a short drive from San Antonio to the south is the wonderful Winter Garden District and the Rio Grande Valley with its winter gardens, its orange and grapefruit orchards; then across the river is Old Mexico. One can leave San Antonio in the morning and be in Monterrey in the afternoon, driving over a wonderful paved highway. A paved highway from San Antonio to Mexico City will soon be opened and a three-day auto ride to this beautiful city in the center of a wonderfully interesting country will be one of San Antonio's offerings to the people of the United States.

San Antonio is not built on an engineer's plan. It is a cosmopolitan city where after a few scant minutes' walk from the business section a visitor thinks himself in another country, surrounded by foreigners, speaking another language. In Haymarket Plaza at night "Chili queens" vend their wares; strolling guitar players hum soft songs of Old Spain and Mexico; Mexican senoritas and their gallants eat at tables lighted with oil lamps and lanterns, or idly stroll through Milam Square.

Modern skyscrapers seem to protect the two-hundred-year-old Alamo and San Fernando Cathedral and other landmarks in the downtown business district. The San Antonio River lazily wends its way from its source in Brackenridge Park through the heart of the business district and thence south through the city, necessitating bridges nearly every block throughout its course. Palms and tropical shrubs planted along its banks nod serenely in the breeze.

Parks and plazas occupy acres upon acres of other-

1. Medical and Surgical Hospital. 2. Robert B. Green Memorial Hospital. 3. Santa Rosa Hospital. 4. Physicians and Surgeons Hospital.



Some San Antonio Churches. 1. Travis Park Methodist Church. 2. First Baptist Church. 3. St. Marks Episcopal Church. 4. First Presbyterian Church. 5. Jewish Synagogue.

wise valuable business and residential properties throughout the city. Many of these have stone and rock community houses of Spanish design and modern playground equipment of every nature for the entertainment of children. Scores of tennis courts and a number of municipal swimming pools are also maintained in certain parks for the recreation of San Antonians and visitors.

Historical landmarks in San Antonio afford much attention from visitors. First and foremost stands the Alamo, maintained as a monument to the martyrdom of that little group of Texans who withstood the onslaught of several thousands of Mexicans until the last man died. "Thermopylae had its messenger of defeat; the Alamo had none."

San Fernando Cathedral, the geographical center of San Antonio upon its establishment as a city in 1731, nestles adjacent to the Frost National Bank Building. Missions San Jose, San Juan, Espada and Concepcion are maintained along the South Loop, Mission Road, as perpetual reminders of the staunch spirits of Spanish missionaries engaged in the perilous task of converting the Indians to Christianity.

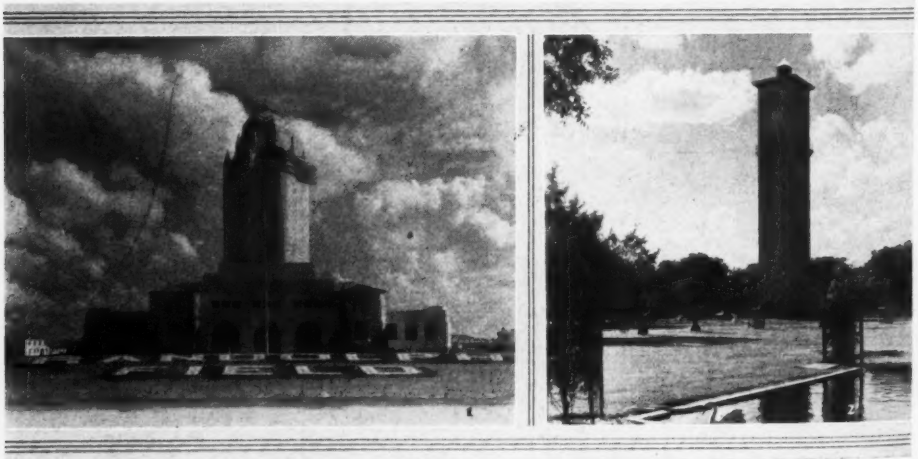
The Spanish Governor's palace recently restored to its original condition is a reminder of the years when San Antonio was the capital of the outlying provinces of New Spain.

The house occupied by O. Henry during his residence in San Antonio is among the places of interest.

The natural beauty and man-made additions to Brackenridge Park, its bridle paths, the polo field, municipal golf course, the bathing beach on the San Antonio River, the many picnic grounds, with grates, and wood in convenient stacks, the beautiful Japanese sunken garden, are enjoyed by all. The Witte Museum, with its many thousands of relics and exhibits, occupies hours of time of visitors interested in history, art and archeology. Last, but perhaps foremost of the attractions of this wonderful park, comes the zoo. The bird refugees, containing thousands of fowl of all nature from all parts of the world; the seal ponds, the hippopotamus, the duck ponds, attract attention of grown-ups and children alike. Ferocious animals in cages, the turtles, ostrich, and many others come in for their share of attention. Monkey Island, with its constantly chattering population, and the barless bear pits perhaps attract more onlookers than any other of the many thousands of animals.

The United States Army establishments in San Antonio are larger and of more importance than any other maintained by this Government. Fort Sam Houston is situated on the northern edge of the city limits and contains all the necessary office buildings, officers' quarters, barracks, supply houses, and so on, necessary for a military establishment of approximately 10,000 men. One of the four quartermaster supply depots maintained by the United States, with its rows upon rows of warehouses, is situated here. Four flying fields, including Randolph Field, "the West Point of the Air," constructed during the past few years at a total cost of over $20,000,000.00, are maintained by the United States Army within a radius of fifteen miles of San Antonio. Kelly Field, the advanced flying field for the United States Army pilots, is known through its many famous graduates who have left the army service for other aviation triumphs.

Two large office buildings are devoted principally to the medical profession. The Medical Arts Building is classed as one of the most beautiful buildings, from an architectural standpoint, in the South. The modern hospital on the top floor is easily accessible to the physicians whose offices are on ten floors of this building. The Nix Professional Building was constructed after thorough research in other cities of the nation, with the idea of erecting the most modern building in



1. Administration Building, Randolph Field, "West Point of the Air." 2. Clock Tower and Quadrangle, Fort Sam Houston.

America for medical offices and hospital, combined with other necessary conveniences. The lower third of this twenty-four-story building is devoted to an efficient storage garage for tenants and patients. The next eight floors are devoted to offices for physicians and men in allied professions. The top third contains one of the most modern hospitals in the South. These two hospitals are sufficiently high from the street to enjoy freedom from all street noises, and to receive the breeze which constantly blows at that altitude.

The Santa Rosa Hospital is the largest hospital in Southwest Texas.

Familiarity with San Antonio's climate and many other attractions will cause many to wish to return after their visit during the Southern Medical Convention.

After San Antonio, Mexico

PUBLIC HEALTH IN MEXICO*

The improvement of the public health service in Mexico in the last two decades has been outstanding. The impressive building in Mexico City dedicated to the Public Health Department, a beautiful and imposing edifice,† illustrates the paramount importance given to health matters by the present government of Mexico.

Since the Revolutionary Constitution of 1917, the Department of Public Health has been an autonomous institution with powers in all the nation. It has gradually set new standards of health in the country.

The peculiar organization of the nation as a federal republic had led to the establishment of state and local boards of health, among which the board of health of the federal district was not only the leading body, but was also charged with those aspects of public health which have an international importance. It had established delegations in all maritime and frontier ports of entry. Occasionally, during grave epidemics which were considered to menace the whole country, the Federal Government exercised its authority through the local boards of health.

Since 1917, the Department has gradually extended its powers and has not only set a standard for the states to follow, but is taking hold of the technical direction of public health administration.

Through its delegations in the capitals of the states and through its coordination of all public health services in a cooperative system it is hoped that in the future the Federal Department will have in its hands the direction of all health activities in the country.

Because of the vast territory and relatively sparse population composed of native Indians, European stock, and a mixture of both, the difficulties of raising the health standards of the country have been great.

Health authorities may be judged by their success in ridding the country of yellow fever, plague and cholera, and in diminishing the morbidity from smallpox, typhus fever, diphtheria and scarlet fever.

Tuberculosis is now on its decline and in many cities where an adequate water supply is available the typhoid fever rate is low.

Malaria is still prevalent in some states along the coasts, chiefly in the rural communities, but in many of the cities where an effective anti-mosquito campaign has been established the rate is much lower than in the past.

The control of transmissible diseases is not the only aim of the Department.

The fight against infantile mortality is progressing rapidly with the establishment of pre- and post-natal clinics, day nurseries and milk dispensaries.

Hygienic education is attempted by public lectures, posters, pamphlets, moving pictures and radio, as well as by employment of public health nurses and the missionary doctor who reaches the most remote Indian villages.

The inspection of foods and drinks is an important part of the work of the Department. Regulations for the sale of milk are enforced, pasteurization has been adopted in the largest cities, and cattle are inspected and tuberculin-tested.

Abattoirs are subject to rigid inspection by veterinarians.

New regulations for the sale of patent medicines require registration and declaration of composition and the literature advertising the medicine must be approved by the Council. Even radio advertisements must be submitted for approval before they are broadcast.

Narcotics are subject to strict regulations in accordance with international conventions.

The section on vital statistics is improving its work, enlarging the area of registration and the list of diseases subject to notification.

The sanitary engineering division is doing very efficient work in promoting public works such as control of the water supply, sewage, and garbage disposal, as well as drainage and sanitation for mosquito control.

Serums and vaccines are prepared in the laboratories of the Institute of Hygiene in Mexico City. The biologic preparations conform to modern standards and the equipment of the laboratories are completely up-to-date.

The Antirabic Institute is equipped for the preparation of Pasteur and Semple vaccines for humans and for dogs. It has held rabies in check in spite of the fondness of the Mexicans for keeping pet dogs in their houses.

A study of the public health system and a visit to these institutions will show the possibilities of its future.

*Prepared by invitation by Dr. Francisco de P. Miranda, Department of Public Health, Republic of Mexico, Mexico City.

†EDITOR'S NOTE.—The Secretary-Manager of the Southern Medical Association announces that the Department of Public Health, Republic of Mexico, the building referred to as "impressive," as a "beautiful and imposing edifice," will be visited on the Association's tour to Mexico following the San Antonio meeting. The Secretary-Manager, who has visited Mexico, reports that it is an impressive building, that it is a beautiful and imposing edifice, and that one room, the assembly or conference room, with its decorations by the famous Mexican artist, Diegro Rivera, and its furnishings, is alone worth a visit to the building. A special folder giving complete information about the tour may be had from the Association's office, Empire Building, Birmingham, Alabama.

PROGRAM, SOUTHERN MEDICAL ASSOCIATION

Twenty-Eighth Annual Meeting, San Antonio, Texas

November 13-16, 1934

PROGRAM OF ENTERTAINMENT

TUESDAY, NOVEMBER 13, 9:30 P. M. Reception for President, members and guests of the Southern Medical Association, followed by a grand ball, to be held at the Municipal Auditorium.

THURSDAY, NOVEMBER 15, 8:30 P. M. Ranch Party at the Municipal Auditorium, a unique entertainment, typical of the Great Southwest, an entertainment such as only San Antonio can provide. All in attendance upon the San Antonio meeting are cordially invited, no one should miss it.

Golf and Trap Shooting. See page 975 for details.

Entertainment for Visiting Ladies

Mrs. H. O. Wyneken, General Chairman, Committee for Ladies' Entertainment, announces the following activities and entertainment for visiting ladies.

TUESDAY, NOVEMBER 13, 9:30 P. M. Reception for President, members and guests of the Southern Medical Association, followed by a grand ball, to be held at the Municipal Auditorium.

WEDNESDAY, NOVEMBER 14, 9:00 A. M. General meeting of the Woman's Auxiliary to the Southern Medical Association, Tapestry Room, Lobby Floor, St. Anthony Hotel, to be followed by the regular Auxiliary Luncheon in the Roof Garden of the St. Anthony Hotel. Luncheon tickets .75c.

WEDNESDAY, NOVEMBER 14, 3:30 P. M. Historical drive with stop at Spanish Governor's Palace for tea. Automobiles will leave from St. Anthony Hotel.

THURSDAY, NOVEMBER 15, 9:00 A. M. TO 12:00 NOON. Golf tournament at the Willow Springs Golf Club.

THURSDAY, NOVEMBER 15, 4:00 TO 6:00 P. M. Tea at the home of Dr. and Mrs. D. T. Atkinson, Sunset Hill.

THURSDAY, NOVEMBER 15, 8:30 P. M. Ranch Party at the Municipal Auditorium, a unique entertainment, typical of the Great Southwest, an entertainment such as only San Antonio can provide. All in attendance upon the San Antonio meeting are cordially invited, no one should miss it.

Sponsors for Visiting Ladies

Courtesy committees composed of the wives of the members of the Bexar County Medical Society and State Sponsors will be in the lobbies of the principal hotels to give any desired information and render any service possible to visiting ladies.

WOMEN PHYSICIANS

Wednesday, November 14, 7:00 p. m.

La Fonda

The twentieth annual meeting of the Women Physicians of the Southern Medical Association will be held at La Fonda, 2415 Main Street, San Antonio, Wednesday, November 14, at 7:00 p. m.

The business meeting will be followed by a dinner with the Chairman, Dr. Pauline Williams, Richmond, Virginia, presiding. Program features are being arranged.

Women physicians are most cordially invited to take part in any or all of the special entertainment arranged for visiting ladies.

Dr. Minnie C. O'Brien, Nix Professional Building, is local Chairman for Women Physicians.

WOMAN'S AUXILIARY TO THE SOUTHERN MEDICAL ASSOCIATION

Headquarters: St. Anthony Hotel

Wednesday, November 14

The Woman's Auxiliary to the Southern Medical Association, Mrs. Southgate Leigh, Norfolk, Virginia, President, will hold its annual meeting at San Antonio, Texas, Wednesday, November 14, 9:00 a. m. to 12:30 p. m., in the Tapestry Room of the St. Anthony Hotel. The annual session will be concluded with the regular Auxiliary Luncheon at 1:00 p. m. in the Roof Garden of the St. Anthony Hotel, price .75c per plate. Wives, mothers, sisters and daughters of all physicians attending the Southern Medical Association meeting are urged to be present.

The Executive Board, Mrs. Southgate Leigh, President, presiding, will meet Tuesday, November 13, at 12:30 p. m. for luncheon in the Patio of the St. Anthony Hotel. The post-session meeting of the Executive Board, Mrs. J. Bonar White, President, presiding, will be held on Thursday, November 15, at 10:00 a. m. at the St. Anthony Hotel.

See page 974 for complete program.

GENERAL HEADQUARTERS

Registration, Information, Mail, Etc.

Gunter Hotel Ballroom (on Mezzanine Floor)

The General Headquarters (Registration, Information, Mail, Etc.) will be located at the Gunter Hotel in the Ballroom on the Mezzanine Floor, where badges and programs will be issued, and matters concerning dues, changes of address, errors, etc., will be given attention.

The Information Bureau and Convention Post Office are in connection with the Registration Bureau. Competent persons are in charge to give any information or serve the physicians in any way possible. Ask anything you wish to know.

Be sure to register before attending the sessions.

Members of the Association are requested to bring their membership-receipt (blue) card and present it when registering. This will greatly facilitate the registration.

THE BEXAR COUNTY MEDICAL SOCIETY

The Bexar County Medical Society, one of the oldest organized county medical societies in Texas, having been issued a charter in 1853, is host this year to the Southern Medical Association. The Society is one of the few within the territory of the Southern Medical Association who owns its own home.

Their home is a beautiful old residence situated in a highly restricted residential section on a hill overlooking San Antonio. The lawn is beautifully terraced and shaded by native and exotic trees. The property is conservatively worth $100,000.

On the first floor there is a reception room, reading room and library of 6,000 volumes. On this floor is also a well equipped kitchen and dining room.

An auditorium with a seating capacity of more than two hundred is on the second floor equipped with opera chairs, raised stage, exhaust fans for cigarette smoke, public address system and other conveniences. On the walls are displayed photographs of all of the past-presidents.

The business activities of the Society are in a wing on the second floor. These comprise a telephone exchange, nurses' registry, information bureau, credit and collection department, and two monthly publications: *Southwest Texas Medicine*, which goes to the physicians of Southwest Texas, and *Health and Happiness*,

which has a lay circulation of some 6,000. The Society employs a manager, a librarian and six assistants. The Bexar County Medical Society has 274 members.

As many as can possibly do so should avail themselves of the privilege of a visit to the home of the Bexar County Medical Society. It is situated at 202 West French Place.

THE TOUR TO OLD MEXICO

The Association will conduct an official, personally directed, ALL-EXPENSE, tour to Mexico following the San Antonio meeting. The tour will be under the direction of the Secretary-Manager who, himself, has been over all of the ground to be covered and has worked out a tour that, in his judgment, will enable the party, within the time limit, to see the most and the best of Mexico.

The party will leave San Antonio Friday evening, November 16, after all activities of the annual meeting have been completed, arriving in Mexico City Sunday morning, November 18, and leaving Mexico City, on the return trip, Friday evening, November 23, reaching San Antonio early Sunday morning, November 25—six full days in Mexico. A stop will be made at Monterrey for breakfast Saturday morning and for an hour's sight seeing trip over the city.

The tour is not conducted for profit—it is in no sense a commercial enterprise. It is to be limited to physicians and their ladies, and those connected directly or indirectly with the medical profession in attendance at the San Antonio meeting. It has been planned throughout as a professional movement, and will be kept as such, being handled as a "family party." The tour will be limited in size.

Anyone who is interested in seeing Old Mexico, "a Foreign Land a Step Away," will probably never again have a better opportunity, or be able to make a trip there under more delightful circumstances, than with the Southern Medical Association group after the San Antonio meeting.

Any who may be interested should write the Southern Medical Association, Empire Building, Birmingham, Alabama, for their special folder giving complete information about the tour.

STATE MEDICINE

Wednesday, November 14, 12:30 p. m.

Luncheon meeting, general topic STATE MEDICINE, Plaza Hotel Roof Garden. Luncheon .75c. See page 962 for program.

LUNCHEON CLUBS

The following luncheon clubs of San Antonio extend most cordial invitations to all physicians in attendance upon the Southern Medical Association meeting, who are members of these clubs in their home cities, to lunch with them:

Rotary Club, Friday, November 16, 12:30 p. m., St. Anthony Hotel.

Kiwanis Club, Friday, November 16, 12:30 p. m., Gunter Hotel.

Lions Club, Wednesday, November 14, 12:30 p. m., Gunter Hotel.

Optimist Club, Wednesday, November 14, 12:30 p. m., St. Anthony Hotel.

Conopus Club, Friday, November 16, 12:30 p. m., Plaza Hotel.

ALUMNI REUNIONS

Wednesday, November 14, 7:00 p. m.

Wednesday has been set aside for Alumni Reunions. Arrangements are not being made for as many schools as at some previous meetings, only the schools where it is anticipated there will be a sufficient number to justify a reunion dinner. Here follow the names of the schools for which alumni dinners have been arranged and the name of the San Antonio physician who will act for each school group. Dr. Herbert Hill, Nix Professional Building, is Chairman of the Alumni Reunion Committee. Arrangements will be made for other schools not listed if they wish a dinner and the Chairman of the Committee is notified.

University of Texas School of Medicine, Galveston, Carl G. Giesecke, Nix Professional Building.

Baylor University College of Medicine, Dallas, S. E. Russ, 205 Camden Street.

Tulane University School of Medicine, New Orleans, David R. Sachs, Nix Professional Building.

Vanderbilt University School of Medicine, Nashville, Douglas Largen, Medical Arts Building.

Johns Hopkins University School of Medicine, Baltimore, W. E. Nesbit, Medical Arts Building.

University of Louisville School of Medicine, Louisville, W. H. Hargis, 205 Camden Street.

University of Tennessee School of Medicine, Memphis, W. R. Suggs, Nix Professional Building, San Antonio.

University of Virginia School of Medicine, University, and Medical College of Virginia, Richmond, a joint reunion.

University of Alabama School of Medicine, University, L. L. Lee, Medical Arts Building.

PATHOLOGY ROUND TABLE

Nix Professional Building Basement

Wednesday, November 14, 7:00 p. m.

For those interested in microscopic pathology a dinner and round table has been arranged. Dr. Joseph Colt Bloodgood, Baltimore, Maryland, will lead the round table discussion and demonstrate border line malignant diseases under the microscope. The dinner and round table is open to any who may wish to attend, but will be found particularly interesting and helpful to pathologists, surgeons and gynecologists. This will be held in the physicians' recreation room in the basement of the Nix Professional Building. Any who wish to attend will please notify Dr. Dudley Jackson or Dr. D. A. Todd, Nix Professional Building, San Antonio, in advance so they may know how many to arrange for.

SCIENTIFIC EXHIBITS

Gunter Hotel Mezzanine Floor

Exhibits will be open Tuesday, Wednesday, Thursday and Friday, November 13-16, from 8:00 a. m. until 6:00 p. m., except Friday, when they will close at 2:00 p. m.

Dr. Henry H. Turner, Oklahoma City, Okla.: Endocrine studies.

Dr. Merritt B. Whitten, Dallas, Tex.: The coronary circulation and myocardial infarction.

Dr. Hugh Leslie Moore and Dr. Robert L. Moore, Dallas, Tex.: Types of pulmonary tuberculosis in children.

Dr. Byron L. Robinson and Dr. William C. Langston, University of Arkansas School of Medicine, Little Rock, Ark.: Castration atrophy and theelin: effect of theelin on uteri of castrates.

Dr. Everett C. Fox and Dr. Bedford Shelmire, Department of Dermatology, Baylor University College of Medicine, Dallas, Tex.: Skin cancer.

Dr. Leslie M. Smith, El Paso, Tex.: Coccidiodal granuloma.

Dr. Robt. D. Schrock, Dr. John P. Lord and Dr. Herman F. Johnson, Department of Orthopedic Surgery, University of Nebraska Medical School, Omaha, Neb.: Bone tumors.

Dr. W. K. West and Dr. C. R. Rountree, University of Oklahoma School of Medicine, Oklahoma City, Okla.: Fractures, with special emphasis on skeletal traction and bone grafts.

Dr. H. A. Gamble, King's Daughters Hospital, Greenville, Miss.: Apparatus for prevention of post-operative phlebitis and embolism.

Dr. Addison G. Brenizer, Charlotte, N. C.: (1) Modifications of operations for cleft palate; (2) Intestinal anastomoses; (3) Ureteral transplantation.

Dr. Herbert T. Hayes, Dr. J. Wade Harris and Dr. Harry B. Burr, Houston, Tex.: Lymphogranuloma inguinale.

Dr. Curtice Rosser and Dr. Lewis Waters, Baylor University College of Medicine, Dallas, Tex.: Anal tumors and rectal foreign bodies.

Dr. W. W. Brandes, Dr. A. P. D'Errico and Dr. Lewis Waters, Department of Pathology, Baylor University College of Medicine, Dallas, Tex.: Tumors of the brain and spinal cord.

Dr. Sidney Israel, Houston, Tex.: Bronchoscopy and esophagoscopy.

Dr. John O. McReynolds, St. Paul's Hospital, Dallas, Tex.: The crystalline lens system in man and the lower animals.

Dr. Abell D. Hardin, Baylor University College of Medicine, Dallas, Tex.: Bronchoscopy.

Dr. Curt von Wedel, Oklahoma City, Okla.: Plastic surgery.

Dr. Rigney D'Aunoy and Dr. Emmerich von Haam, Department of Pathology and Bacteriology, Louisiana State University Medical Center, New Orleans, La.: Pathological museum.

Dr. Karl John Karnaky, Houston, Tex.: Causes and treatment of leukorrhea with special reference to monilia albicans, trichomonas vaginalis and cervical lesions.

Dr. French K. Hansel, St. Louis, Mo.: Allergy of the nose and paranasal sinuses.

Dr. Hardy A. Kemp, Dr. W. H. Moursund and Dr. H. E. Wright, Department of Bacteriology and Hygiene, Baylor University College of Medicine, Dallas, Tex.: Relapsing fever in Texas.

Dr. Ernest Carroll Faust, Dr. Enrique Koppisch, Dr. Juan A. Pons and Dr. Wm. A. Hoffman, Department of Tropical Medicine, Tulane University School of Medicine and School of Tropical Medicine, San Juan, Puerto Rico, New Orleans, La., and San Juan, Puerto Rico: Studies on Manson's blood fluke infection in Puerto Rico.

Dr. George R. Callender, Lieutenant-Colonel, Medical Corps, United States Army, Station Hospital, Fort Sam Houston, Tex. (Research of the Army Medical Department, exhibit from the Army Medical Museum, Washington, D. C.): (1) Dysentery, amebic and bacillary; (2) Tumors of the eye; (3) Tumors of the lymphatic and hematopoietic system; (4) Nerve leprosy; (5) Three-color photography.

Dr. C. M. Simpson and Dr. J. R. Kilman, Department of Urology, Scott and White Hospital, Temple, Tex.: Neoplasms of the kidney.

Dr. V. M. Longmire and Associates, Department of Medicine, Scott and White Hospital, Temple, Tex.: Modified Hartmann indirect citrate transfusion method.

Dr. G. V. Brindley, Dr. A. C. Scott, Jr., Dr. M. W. Sherwood and Dr. Charles Phillips, Departments of Surgery and Pathology, Scott and White Hospital, Temple, Tex.: (1) Cancer of the large bowel; (2) Gallbladders.

Dr. R. T. Wilson and Dr. R. G. Giles, Department of Roentgenology, Scott and White Hospital, Temple, Tex.: (1) Neoplasms of bone; (2) Neoplasms of lung.

Dr. J. M. Martin and Dr. C. L. Martin, Baylor University Hospital, Dallas, Tex.: Radiation treatment of cancer.

Dr. John A. Beals, King's Daughters Hospital, Greenville, Miss.: Unusual radiological conditions.

Dr. Harry C. Schmeisser, Director, Pathological Institute, University of Tennessee School of Medicine, Memphis, Tenn.: Clinical and anatomical lesions.

Dr. Joseph Colt Bloodgood, Baltimore, Md.: Radiation therapy in bone tumors.

Dr. Fred Y. Durrance, Houston, Tex.: Bezoars with a clinical and geographical survey of the persimmon phytobezoar as seen in the United States.

Dr. George M. Edwards, Lieutenant-Colonel, Medical Corps, United States Army, Station Hospital, Fort Sam Houston, Tex.: Bone tumors.

Board of Registry, American Society of Clinical Pathologists, Denver, Colo.: The training and registration of laboratory technicians.

United States Public Health Service, Washington, D. C.: The St. Louis outbreak of epidemic encephalitis.

Texas State Department of Health, Austin, Tex.: Texas malaria control by Texas State Department of Health and United States Public Health Service.

BEXAR COUNTY MEDICAL SOCIETY, San Antonio: A collective exhibit by members of the Society prepared under direction of a special committee from the Society.

Ophthalmology and Otolaryngology

Dr. D. T. Atkinson: External diseases of the eye.

Dr. W. D. Gill: (1) Sarcoma of choroid; (2) Metastatic choroiditis; (3) Cancer of the larynx; (4) Plastic surgery as related to ophthalmology and otolaryngology.

Dr. S. C. Applewhite and Dr. J. M. Moore: (1) Melanoma of iris; (2) Traumatic glaucoma.

Dr. S. C. Applewhite and Dr. H. Hartman: Detachment of retina.

Dr. J. H. Burleson, Dr. J. B. Moore and Dr. H. Hartman: Corneo-scleral malignancy.

Dr. A. F. Clark, Dr. J. B. Moore and Dr. H. Hartman: Pseudoglioma of retina.

Dr. F. H. Rosebrough and Dr. W. A. Ostendorf: Microscopic pathology of eye.

Dr. S. C. Applewhite: Localization of foreign bodies in eye.

Dr. A. F. Clark: Foreign bodies removed from air and food passages.

Dr. E. Meredith Sykes: Foreign bodies removed from air and food passages.

Dr. G. A. Pagenstecher: Carcinoma of nose.

Obstetrics

Dr. P. I. Nixon and Dr. J. M. Moore: Siamese foetuses.

Dr. R. A. Goeth and Dr. J. M. Moore: Hydatid mole.

Dr. Leona Kasten and Dr. D. A. Todd: Siamese twins (6½ months).

Dr. H. H. Ogilvie and Dr. H. Hartman: Degenerated uterine fibromyoma complicating pregnancy.

Dr. Minnie C. O'Brien and Dr. D. A. Todd: Six weeks' foetus with membranes intact.

Dr. Minnie C. O'Brien: Short cord complicating labor.

Gynecology

Dr. O. J. Potthast and Dr. H. Hartman: Adenomyoma of uterus.

Dr. H. H. Ogilvie and Dr. H. Hartman: (1) Endometriosis; (2) Endometrial cyst; (3) Pneudomucinous cyst; (4) Simple follicular cysts of ovary.

Dr. H. H. Ogilvie and Dr. J. M. Moore: Endometriosis of ovary.

Dr. C. S. Venable and Dr. D. A. Todd: Papillary cystadenoma of ovary.

Dr. R. A. Roberts and Dr. D. A. Todd: Malignant teratoma of ovary.

Dr. J. K. Donaldson and Dr. D. A. Todd: Double uterus.

Dr. J. W. Nixon and Dr. D. A. Todd: Papillary cystadenocarcinoma of ovary with extension.

Dr. G. A. Pagenstecher: Lipiodol injection of fallopian tubes.

Genito-Urinary

Dr. O. J. Potthast and Dr. R. E. Scott: Teratoma of testicle.

Dr. Wm. Wolf and Dr. J. M. Moore: (1) Teratoma of kidney; (2) Teratoma of testicle.

Dr. T. N. Goodson and Dr. J. M. Moore: Carcinoma of kidney.

Dr. H. McC. Johnson: (1) Carcinoma of kidney; (2) Tuberculosis of the kidney; (3) Differential diagnosis between tuberculosis, cancer and polycystic kidney.

Dr. R. R. Ross, Dr. W. H. Heck and Dr. J. M. Moore: (1) Papilloma of kidney pelvis; (2) Tuberculosis of the kidney; (3) Hypernephroma; (4) Nephrolithiasis.

Dr. O. J. Potthast and Dr. H. Hartman: Cortical abscess of kidney.

Dr. A. G. Cowles and Dr. H. Hartman: (1) Teratoma of testicle; (2) Hydronephrosis; (3) Pyonephrosis.

Dr. A. G. Cowles, Dr. H. Hartman and Dr. R. C. Atmar: Hypernephroma.

Dr. A. G. Cowles, Dr. H. Hartman and Dr. H. L. Davis: Hypernephroma.

Dr. Lucius Hill and Dr. B. F. Stout: Bilateral hydronephrosis.

Dr. J. Manning Venable, Dr. Frank M. Martin and Dr. B. F. Stout: Embryonic sarcoma of right kidney with hydronephrosis of left kidney.

Dr. B. F. Stout: Hypernephroma.

Dr. Byron W. Wyatt: (1) Congenital anomalies of kidney; (2) Tuberculosis of kidney; (3) Solitary cyst of kidney; (4) Papillary adnecarcinoma of kidney pelvis.

Dr. O. J. Potthast: Nephroptosis.

Dr. R. L. Davis: (1) Nephroptosis; (2) Ectopic kidney; (3) Diverticulum of ureter.

Respiratory

Dr. D. A. Todd: Caseous pneumonia.

Dr. O. J. Potthast: Teratoma of lung.

Dr. R. G. McCorkle: (1) Artificial pneumothorax; (2) Abscess of lung.

Dr. J. W. Nixon: (1) Surgery of pulmonary tuberculosis; (2) Lung abscess; (3) Mediastinal tumors.

Dr. G. A. Pagenstecher: Bronchogenetic fistula.

Dr. Lee Rice, Dr. M. M. Minter and Dr. H. Hartman: Metastatic endothelioma of lungs.

Dr. O. M. Roan, Dr. H. Hill and Dr. D. A. Todd: Flat cell carcinoma of lung with brain metastases.

Dr. F. Martin and Dr. D. A. Todd: Tracheo-esophageal fistula.

Dr. H. Hill and Dr. D. A. Todd: Sarcoma of lung with metastasis.

Gastro-Intestinal

Dr. C. C. Cade and Dr. J. M. Moore: Hemangio-endothelioma of spleen.

Dr. R. E. Scott: Melano-epithelioma of intestine.

Dr. P. G. Bowen and Dr. H. Hartman: Perforating gastric ulcer, chronic duodenal ulcer, atrophic gastritis.

Dr. S. E. Russ and Dr. H. Hartman: (1) Esophageal varices (ruptured), (2) Duodenal ulcer, chronic gastritis.

Dr. T. M. Dorbandt, Dr. H. H. Ogilvie and Dr. H. Hartman: Calculous cholecystitis.

Dr. R. A. Roberts and Dr. D. A. Todd: (1) Acute yellow atrophy of liver following cincophen poisoning; (2) Typhoid ulcers of intestine.

Dr. O. M. Roan, Dr. F. Paschal and Dr. D. A. Todd: Acute hemorrhagic pancreatitis.

Dr. D. Sachs, Dr. W. R. Suggs and Dr. D. A. Todd: Tuberculosis of intestine.

Dr. H. Leopold and Dr. D. A. Todd: Adenocarcinoma of colon.

Dr. O. J. Potthast and Dr. D. A. Todd: Carcinoma of transverse colon.

Dr. O. J. Potthast and Dr. H. Hartman: Ulcer of stomach.

Dr. W. H. Cade, Dr. P. I. Nixon and Dr. D. A. Todd: Diverticulum of cecum.

Dr. O. M. Roan and Dr. D. A. Todd: Mesenteric cyst.

Dr. V. C. Tucker, Dr. J. W. Nixon and Dr. D. A. Todd: Polyposis of colon.

Dr. H. Hill and Dr. H. Hartman: Carcinoma of jejunum.

Dr. O. J. Potthast: Large stone of common bile duct.

Dr. W. B. Russ: Carcinoma of the stomach (eight cases).

Dr. W. S. Hamilton: Differential diagnosis in gastro-intestinal studies.

Dr. T. A. Pressly: Gas shadows in perforated gastric and duodenal ulcers.

Dr. G. A. Pagenstecher: X-ray studies of the acute abdomen.

Dr. J. K. Donaldson: Water puddle duodenum.

Nervous System

Dr. W. D. Gill and Dr. R. E. Scott: Gliosarcoma of brain.

Dr. J. D. Gleckler and Dr. R. E. Scott: Tuberculoma of cerebellum.

Dr. J. Kopecky and Dr. H. Hartman: Spongioblastoma.

Dr. T. M. Dorbandt and Dr. H. Hartman: (1) Spongioblastoma; (2) Astrocytoma.

Dr. J. D. Gleckler and Dr. H. Hartman: (1) Glioma of frontal lobe; (2) Tuberculoma of cerebellum.

Dr. R. A. Roberts and Dr. B. F. Stout: Glioma of cerebral hemispheres.

Dr. J. D. Gleckler: Localization of intracranial pathology.

Cardiovascular System

Dr. C. D. Steinwinder, Dr. E. M. McPeak and Dr. J. M. Moore: Congenital absence of the interventricular septum in an adult laborer.

Dr. B. O. Burch and Dr. H. Hartman: Metastatic carcinoma of heart.

Dr. J. Kopecky and Dr. H. Hartman: (1) Syphilitic aortitis; (2) Coronary thrombosis; (3) Mitral stenosis.

Dr. D. A. Todd: (1) Vegetative endocarditis; (2) Myocardial infarction with mural thrombosis.

Dr. H. N. Leopold and Dr. D. A. Todd: Myocardial infarction with spontaneous rupture.

Dermatology

Dr. T. A. Pressly and Dr. H. Hartman: Madura foot.

Skeletal System

Dr. C. S. Venable and Dr. M. Davis: Multiple myelomata.

Dr. J. W. Goode: Fractures of the elbow.

Dr. Milton Davis: (1) Diseases of bone—Geschickter's classification; (2) Differential diagnosis between rickets, congenital lues and scurvy.

Dr. G. A. Pagenstecher: Osgood-Schlatter's disease.

Miscellaneous

Dr. H. H. Ogilvie and Dr. H. Hartman: (1) Paget's disease of the breast; (2) Teratoma of sacral region.

Dr. W. B. Russ and Dr. H. Hartman: Cystic disease of the breast.

Dr. E. M. McPeak and Dr. D. A. Todd: Retroperitoneal lymphosarcoma.

Dr. D. A. Todd: Retroperitoneal lymphosarcoma with involvement of liver.

Dr. Cole Kelly and Dr. D. A. Todd: Pick's disease.

Dr. G. A. Pagenstecher: Teratoma of neck.

Dr. J. Kopecky and Dr. H. Hartman: Agranulocytosis.

Dr. Lucius Hill: Persistent thymic enlargement.

Dr. Thomas M. Dorbandt: Calcified pineal gland.

Dr. W. W. Bondurant: Case of scurvy in an adult.

MOVING PICTURES

Gunter Hotel, Balcony in Ballroom (Mezzanine Floor)
Entrance by Stairway Next to Registration Booth

Here follow the titles of moving pictures that will be shown each day, known at the time this preliminary program went to press. There will be others. This is not the order in which these films will be shown. The official program will give the order and time each day that each film will be shown.

Dr. Roy T. Goodwin, San Antonio, Tex.: Supravaginal hysterectomy for uterine fibroids.

Dr. J. W. Nixon, San Antonio, Tex.: Surgery of pulmonary tuberculosis.

Dr. T. E. Christian, San Antonio, Tex.: (1) Interfragmentary anesthesia; (2) Treatment of compound fractures; (3) Treatment of dislocation of acromio-clavicular joint.

Dr. Dudley Jackson, San Antonio, Tex.: (1) Treatment of snakebite; (2) Rabies.

Dr. C. G. Giesecke, San Antonio, Tex.: Tuberculous lymphadenitis of neck.

Dr. J. K. Donaldson, San Antonio, Tex.: Herniorrhapy by autogenous facia lata transplantation.

Dr. H. McC. Johnson, San Antonio, Tex.: Fibro-adenectomy of the prostate.

Dr. Karl John Karnaky, Houston, Tex.: Trichomonas vaginalis.

Dr. V. M. Longmire and Associates, Department of Medicine, Scott and White Hospital, Temple, Tex.: A modification of the Hartmann indirect citrate transfusion method as used at the Scott and White Hospital.

Dr. A. C. Scott, Jr., Department of Surgery, Scott and White Hospital, Temple, Tex.: Technic of subtotal supravaginal hysterectomy.

Dr. G. V. Brindley, Department of Surgery, Scott and White Hospital, Temple, Tex.: Posterior cautery excision of the cancerous rectum.

Dr. W. B. McCall (D.D.S.), Department of Dental Surgery, Scott and White Hospital, Temple, Tex.: An interesting and unusual case of misplaced third molar, and its removal.

Dr. John O. McReynolds, Dallas, Tex.: Eye operations.

Dr. Murdock Equen, Atlanta, Ga.: Bronchoscopic studies.

Dr. W. Likely Simpson, Memphis, Tenn.: Radical antrum operation with ethmoid and sphenoid exenteration by the trans-antral route.

Dr. Addison G. Brenizer, Charlotte, N. C.: Anastomosis of intestinal tract employing a hemorrhoidal clamp.

Dr. Robert H. Millwee, Dallas, Tex.: The cancer cell and some things we know about.

TECHNICAL EXHIBITS

Gunter Hotel Ballroom and Mezzanine Floor

The Technical Exhibits have a real scientific value and physicians who wish to keep abreast of the times and know the latest in drugs and medical appliances should spend some time with these exhibits. A large amount of useful information can be procured at these exhibits. Many exhibitors have nothing for sale, the representatives of the firms being there to give the latest information regarding their products. Those who have items for sale will gladly give information regarding them. *Be sure to visit the Technical Exhibits.*

EXCERPTS FROM THE BY-LAWS

Sec. 3. Except by special order, the order of exercises, papers and discussions as set forth in the official program shall be followed from day to day until it has been completed, and all papers omitted will be recalled in regular order.

Sec. 4. No address or paper before the Association, or any of its sections, except the addresses of the President and Orators, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than one time on any subject, provided each essayist be allowed ten minutes in which to close the discussion.

Sec. 5. All papers before the Association, or any of its sections, shall be the property of the Association. Each paper shall be deposited with the Secretary when read, or within ten days thereafter.

Sec. 6. No paper shall be published except upon recommendation of the Publication Committee, which shall consist of the Secretary as Chairman, with the Chairman and Secretary of each section as its constant members.

PROGRAM

The following clinics and clinical sessions, sections, allied and visiting associations, compose the program for the San Antonio meeting. The complete preliminary program of each will be found in this order on succeeding pages:

Texas Ophthalmological and Otolaryngological Association.
Texas Dermatological Society, hosts to the Dermatological Conference of the Mississippi Valley.
Texas Orthopedic Society.
Texas Pediatric Society.
Academy of Pediatrics, Region 2.
Clinical Session, Medical.
Clinical Session, Surgical.
Clinical Session, Obstetrical and Gynecological.
General Public Session.
Luncheon Session, STATE MEDICINE.
General Clinical Session.
Section on Medicine.
Section on Pediatrics.
Section on Gastroenterology.
Section on Pathology.
Section on Allergy.
Section on Neurology and Psychiatry.
Section on Radiology.
Section on Dermatology and Syphilology.
Section on Surgery.
Section on Bone and Joint Surgery.
Section on Gynecology.
Section on Obstetrics.
Section on Urology.
Section on Railway Surgery.
Section on Ophthalmology and Otolaryngology.
Section on Public Health.
National Malaria Committee.
American Society of Tropical Medicine.
American Public Health Association, Southern Branch.
Society for Experimental Biology and Medicine, Southern Section.
Section on Medical Education.

TEXAS OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SOCIETY

Monday: St. Anthony Hotel Tapestry Room

Tuesday: St. Marks Episcopal Church Parish House

Officers

President—C. C. Cody, Houston.
Vice-President—V. R. Hurst, Longview.
Secretary—Oscar M. Marchman, Dallas.
Treasurer—C. P. Schenck, Fort Worth.

Monday, November 12, 9:00 a. m.

St. Anthony Hotel Tapestry Room

1. President's Address: C. C. Cody, Houston, Tex.
2. Presentation of honor guest: George M. Coates, Philadelphia, Pennsylvania.
3. "The Gradenigo Syndrome and Petrous Apex Involvement" (Lantern Slides), Horace T. Aynesworth, Waco, Tex.
   Discussion opened by E. H. Cary, Dallas, Tex.
4. "Atypical Ear Conditions, with Report of Cases with X-Ray Findings" (Lantern Slides), E. F. Stroud, Corpus Christi, Texas.
   Discussion opened by C. F. Crain, Corpus Christi, Tex.; Robert E. Parrish, San Antonio, Tex.
5. "Local versus Systemic Treatment of Allergic Conditions," J. H. Black, Dallas, Tex.
   Discussion opened by H. L. Warwick, Fort Worth, Tex.
6. "The Problem of the Ethmoid," George M. Coates, Professor of Otolaryngology, University of Pennsylvania School of Medicine, and Professor of Otorhinology, University of Pennsylvania Graduate School of Medicine, Philadelphia, Pennsylvania.
   Discussion opened by J. H. Foster, Houston, Tex.

Adjourn for Lunch.

Golf at San Antonio Country Club for members who wish to play.

Monday, November 12, 2:00 p. m.

St. Anthony Hotel Tapestry Room

CLINIC SESSION

7. "Massive Intra-Ocular Hemorrhage Secondary to Chronic Maxillary Sinusitis," F. H. Rosebrough, San Antonio, Tex.
8. "Mastoid Complications," Robert E. Parrish, San Antonio, Texas.
9. "Frontal Sinusitis Complications," A. F. Clark, San Antonio, Texas.
10. "Epibulbar Carcinoma with Exenteration of Orbit: Case Report," W. D. Gill, San Antonio, Tex.
11. "Microtia: Case Report," A. N. Champion, San Antonio, Tex.

Monday, November 12, 7:00 p. m.

Annual Banquet, St. Anthony Hotel Roof Garden

Tuesday, November 13, 9:00 a. m.

St. Marks Episcopal Church Parish House

CLINICAL SESSION

The President, C. C. Cody, Houston, Texas, presiding.

Each presentation will be limited strictly to a maximum of fifteen minutes except as otherwise indicated.

1. 9:00 C. C. CODY, Houston, Tex.: Some remarks by the President.

2. 9:15 ELBYRNE G. GILL, Roanoke, Va.: "The Management of Blood Stream Infection Following Mastoiditis" (Lantern Slides).

3. 9:30 DUNBAR ROY, President, American Laryngological Society, and Emeritus Professor of Otorhinolaryngology, Emory University School of Medicine, Atlanta, Ga.: "The Rational Treatment of Nasal Diseases."

4. 9:45 T. W. MOORE, Huntington, West Va.: "Drugs in Otolaryngology."

5. 10:00 RICHMOND McKINNEY, Professor of Otorhinolaryngology, University of Tennessee College of Medicine, Memphis, Tenn.: "Cardiospasm: Its Treatment" (Lantern Slides).

6. 11:00 CLIFTON M. MILLER, Associate Professor of Otolaryngology, Medical College of Virginia, Richmond, Va.: "The Asthma Problem: Some Ways of Meeting It."

7. 11:15 WILLIAM A. WAGNER, Associate Professor of Otolaryngology, Tulane University Graduate School of Medicine, New Orleans, La.: "Technic of Pansinusectomy."

8. 11:30 W. LIKELY SIMPSON, Associate Professor of Otorhinolaryngology, University of Tennessee College of Medicine, Memphis, Tenn.: "Diagnosis and Treatment of Chronic Sinusitis."

Executive business session.

Adjourn for Lunch.

Golf at San Antonio Country Club for members who wish to play.

Tuesday, November 13, 2:00 p. m.

St. Marks Episcopal Church Parish House

9. 2:00 JOHN O. McREYNOLDS, Dallas, Tex.: Nature and Management of Pterygium."

10. 2:15 M. M. CULLOM, Professor of Clinical Otolaryngology, Vanderbilt University School of Medicine, Nashville, Tenn.: "Trachoma: Infection and Treatment."

11. 2:30 E. C. ELLETT, Memphis, Tenn.: "The Therapeutic Value of Strong Adrenalin Solutions."

12. 2:45 J. W. JERVEY, Greenville, S. C.: "A Brief Consideration of Radical Surgery in Paranasal Sinus Disease."

13. 3:00 G. H. B. TERRY, Oteen, N. C.: "Electro Surgery in Laryngeal and Pharyngeal Tuberculosis: An Additional Report."

14. 3:15 EDWARD A. LOOPER, Professor of Rhinolaryngology, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, Md.: "The Use of Bronchoscopy in Pulmonary Diseases."

15. 3:30 HOMER DUPUY, Professor of Otorhinolaryngology, Louisiana State University Medical Center, New Orleans, La.: "Tracheobronchial Diphtheria."

16. 3:45 F. E. LeJEUNE, Professor of Otolaryngology, Tulane University Graduate School of Medicine, New Orleans, La.: "Technic and Use of Suspension Laryngoscopy."

17. 4:00 MURDOCK EQUEN, Assistant Professor of Clinical Otorhinolaryngology, Emory University School of Medicine, Atlanta, Ga.: "Esophageal Obstruction: Diagnosis and Treatment."

4:15—Adjourn.

TEXAS DERMATOLOGICAL SOCIETY
DERMATOLOGICAL CONFERENCE OF THE MISSISSIPPI VALLEY

Officers

TEXAS DERMATOLOGICAL SOCIETY

President—C. F. Lehmann, San Antonio.
Secretary—Everett R. Seale, Houston.

DERMATOLOGICAL CONFERENCE OF THE MISSISSIPPI VALLEY

Acting Chairman—C. F. Lehmann, San Antonio.
Acting Secretary—Everett R. Seale, Houston.
Recording Secretary and Treasurer—Mrs. Irene H. Snyder, Chicago, Ill.

The Texas Dermatological Society is host to the annual Dermatological Conference of the Mississippi Valley.

Tuesday, November 13

10:00 a. m. Clinic at Robert B. Green Memorial Hospital.

1:00 p. m. Luncheon at Robert B. Green Memorial Hospital.

2:00 p. m. Discussion of Cases and Business Meeting of the Dermatological Conference of the Mississippi Valley.

6:30 p. m. Banquet at the Plaza Hotel. Address: "Snapshots in Africa, India and Indo-China," Richard L. Sutton, Kansas City, Mo.

Wednesday, November 14, 12:30 p. m.

Luncheon at St. Anthony Hotel. Address: "X-Ray Dosage in Skin Diseases," George M. MacKee, Professor of Dermatology and Syphilology, New York Postgraduate Medical School and Hospital, New York, N. Y.

TEXAS ORTHOPEDIC SOCIETY

CLINIC SESSION

Gunter Hotel Pan-American Room

Officers

President—Peter M. Keating, San Antonio.
Vice-President—Joe B. Foster, Houston.
Secretary—J. W. Goode, San Antonio.

Wednesday, November 14, 2:00 p. m.

Gunter Hotel Pan-American Room

1. *Clinic:* "Tumors and Infections of Bones and Joints" (x-rays, case histories and patients), conducted by Frank D. Dickson, Kansas City, Missouri, by invitation.

Contributing cases to the Clinic: Dr. Milton Davis, Dr. Asa Beach, Dr. E. A. Cayo, Dr. J. W. Nixon, Dr. T. E. Christian, Dr. Max E. Johnson, Dr. Peter M. Keating, San Antonio, Dr. W. B. Carrell, Dallas, and the X-Ray and Orthopedic Departments, Station Hospital, U. S. Army, Fort Sam Houston.

2. Demonstration of New Bone Saw, E. P. Cayo, San Antonio.

TEXAS PEDIATRIC SOCIETY

CLINICAL SESSION

Gunter Hotel Pan-American Room

Officers

President—Ramsey H. Moore, Dallas.
Vice-President—C. O. Terrell, Fort Worth.
Secretary—Frank H. Lancaster, Houston.

Program arranged by Ramsey Hudson Moore, President, Texas Pediatric Society, Hugh Leslie Moore, President, Southern Medical Association, Dallas, collaborating.

Ramsey Hudson Moore, President, presiding.

Each presentation will be limited strictly to a maximum of fifteen minutes except as otherwise indicated.

Tuesday, November 13, 9:00 a. m.

Gunter Hotel Pan-American Room

1. 9:00 RAMSEY HUDSON MOORE, Dallas, Tex.: Some remarks by the President.

2. 9:15 GEORGE M. CULTRA, Amarillo, Tex.: "Management and Treatment of Meningococcus Meningitis."

3. 9:30 THOMAS D. McCRUMMEN, Austin, Tex.: "A Simple Routine in Handling Infantile Eczema."

4. 9:45 EUGENE ROSAMOND, Memphis, Tenn.: "Further Observations on the Evils of Too Much Milk."

5. 10:00 MAX WOODWARD, Sherman, Tex.: "Food Problems of the One Child Family."

6. 10:15 BOYD READING, Professor of Diseases of Children, University of Texas School of Medicine, Galveston, Tex.: "Theelin in the Treatment of Gonorrheal Vaginitis" (Lantern Slides).

7. 10:30 WILLIAM WESTON, Columbia, S. C.: "Acrodynia."

8. 10:45 HENRY H. TURNER, Assistant Professor of Medicine, University of Oklahoma School of Medicine, Oklahoma City, Okla.: "Pituitary Dwarfism."

9. 11:00 LEONARD F. BENDER, Philadelphia, Pa.: "Pseudohypertrophic Progessive Muscular Dystrophy: Preliminary Report of Cases Treated with Glycocol" (Lantern Slides).

10. 11:15 HUGH McCULLOCH, Assistant Professor of Clinical Pediatrics, Washington University School of Medicine, St. Louis, Mo.: "Certain Dietary Factors in the Control of Dental Caries."

11. 11:30 EDGAR P. COPELAND, Washington, D. C.: "Remarks on Pyloric Stenosis in Infancy."

12. 11:45 BERNARD MYERS, C.M.G., M.D., F.R.C.P., London, England: "Essential (Thrombocytopenic) Purpura Hemorrhagica."

12:15—Adjourn for Lunch.

Tuesday, November 13, 2:00 p. m.

Gunter Hotel Pan-American Room

13. 2:00 WILBURT C. DAVISON, Dean and Professor of Pediatrics, Duke University School of Medicine, Durham, N. C.: "Pediatric Diagnosis" (Lantern Slides).

14. 2:15 EDWARD CLAY MITCHELL, Professor of Pediatrics, University of Tennessee College of Medicine, Memphis, Tenn.: "Report of Four Years' Experience in the Treatment of Malaria with a Comparison of Quinine with Atabrine and Plasmochin and Clinical Results."

15. 2:30 FRANKLIN P. GENGENBACH, Professor of Pediatrics, University of Colorado School of Medicine, Denver, Colo.: "Periodic Health Examination in Children" (Lantern Slides).

16. 2:45 W. AMBROSE McGEE, Richmond, Va.: "The Importance of Immature White Blood Cells in Diseases of Children."

17. 3:00 CLIFFORD G. GRULEE, Clinical Professor of Pediatrics, Rush Medical College University of Chicago, Chicago, Ill.: "Pathology of the New Born."

18. 3:15 LAURENCE R. DeBUYS, New Orleans, La.: "Some Pertinent Remarks on the Human Breast, Particularly with Regard to Its Function."

19. 3:30 ELMER LEE TIMMONS, Colorado Springs, Colo.: "Nutritional Work Among Undernourished School Children."

20. 3:45 HAROLD T. NESBIT, Dallas, Tex.: "Hyperirritability as Related to the Tetany Syndrome."

21. 4:00 ROBERT A. STRONG, Professor of Pediatrics, Tulane University School of Medicine, New Orleans, La.: "Congenital Pyloric Stenosis."

22. 4:15 JOHN WILLIAM AMESSE, Assistant Professor of Pediatrics, University of Colorado School of Medicine, Denver, Colo.: "Control of Tuberculosis in Childhood."

23. 4:30 CALVIN EDWARD BRADLEY, Tulsa, Okla.: "Milk Not a Perfect Food."

24. 4:45 WILLIAM M. TAYLOR, Professor of Pediatrics, University of Oklahoma School of Medicine, Oklahoma City, Okla.: "Infantile Scurvy."

25. 5:00 FRANK H. LANCASTER, Houston, Tex.: "Constipation and Bowel Training."

26. 5:15 HARVEY F. GARRISON, Jackson, Miss.: "Lipoid Pneumonia in Children: Case Report."

27. 5:30 C. H. WEBB, Shreveport, La.: "Treatment of Acute Nephritis in Children" (Lantern Slides).

5:45—Adjourn.

AMERICAN ACADEMY OF PEDIATRICS, Region 2

Regional Chairman—Edward Clay Mitchell, Memphis, Tenn.

Wednesday, November 14, 9:00 a. m.

Plaza Hotel, Ground Floor Meeting Rooms adjacent to Lobby

Clinical meeting consisting of four round table discussions.

1. "The Tonsil Question." Discussion led by Edward Clay Mitchell, Professor of Pediatrics, University of Tennessee College of Medicine, Memphis, Tenn. (Lantern Slides).
   (a) "The Tonsil: Its Embryology, Anatomy, Physiology and Function" (Lantern Slides). L. W. Dean, Professor of Otolaryngology, Washington University School of Medicine, St. Louis, Mo.
   (b) "The Tonsil with Relationship to Its Function and the Deleterious Effect of Removal of Healthy Tonsils," John J. Shea, Memphis, Tenn.
   (c) "Rheumatic Fever and Allied Conditions Relative to the Tonsil as a Focus of Infection." Hugh McCulloch, Assistant Professor of Clinical Pediatrics, Washington University School of Medicine, St. Louis, Mo.
   (d) "The Effect of Diseased Tonsils on the Child's Nutrition," John G. McLaurin, Dallas, Tex.

2. "Infectious Diarrhea." Discussion led by Wilburt C. Davison, Dean and Professor of Pediatrics, Duke University School of Medicine, Durham, N. C.
   (a) Definition: (1) bacillary dysentery; (2) paratyphoid fever; (3) diarrhea of unknown etiology.
   (b) Preventive Measures: (1) epidemiology; (2) vaccines; (3) sanitation.
   (c) Incidence:
   (d) Symptoms and Signs: (1) onset; (2) course; (3) complications.
   (e) Differential Diagnosis:
   (f) Laboratory Data: (1) stool cultures; (2) blood counts; (3) blood chemistry—CO_2 combining power, refractive index, total chlorides; (4) duodenal contents; (5) pathology.
   (g) Treatment: (1) fluid administration; (2) blood transfusions; (3) drug therapy; (4) diet.
   (h) Prognosis:

3. "Allergy." Discussion led by Horton Casparis, Professor of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tenn.; and Lee Bivings, Atlanta, Ga.

4. "Immunization Against Contagious Diseases." Discussion led by M. Hines Roberts, Associate Professor of Pediatrics, Emory University School of Medicine, Atlanta, Ga.
   (a) "Diphtheria Immunization," D. G. Gill, State Board of Health, Montgomery, Ala.
   (b) "Pertussis Immunization," Louis W. Sauer, Evanston, Illinois.
   (c) "Measles Prevention," Warren Quillian, Miami, Fla.

Wednesday, November 14, 2:00 p. m.

Plaza Hotel

Short Business Session, Members of the Academy

Wednesday, November 14, 6:30 p. m.

Plaza Hotel

Dinner Session, joint activity of the American Academy of Pediatrics, Region 2, Texas Pediatric Society, and Section on Pediatrics, Southern Medical Association.

"Heart in Children." Hugh McCulloch, Assistant Professor of Clinical Pediatrics, Washington University School of Medicine, St. Louis, Mo.

"Progress of the Academy." Clifford G. Grulee, Secretary, American Academy of Pediatrics, Chicago, Ill.

CLINICAL SESSION—MEDICAL

GENERAL MEDICINE

Plaza Hotel Ballroom

Program prepared by the President, Hugh Leslie Moore, Dallas, Texas. Lee Rice, San Antonio, Texas, presiding by invitation.

Each presentation will be limited strictly to a maximum of fifteen minutes.

Tuesday, November 13, 9:45 a. m.

Plaza Hotel Ballroom

1. 9:45 LEE RICE, San Antonio: Some remarks by the Chairman.

2. 10:00 GEORGE L. CARLISLE, Associate Professor of Clinical Medicine, Baylor University College of Medicine, Dallas, Tex.: "Clinical Significance in Changes in the First Heart Sound."

3. 10:15 WALTER BAUMGARTEN, St. Louis, Mo.: "The Use of High Protein, Low Caloric, Acid-Ash Diet in Obesity."

4. 10:30 LEWIS J. MOORMAN, Dean and Professor of Clinical Medicine, University of Oklahoma School of Medicine, Oklahoma City, Okla.: "Artificial Pneumothorax in the Treatment of Pneumonia" (Lantern Slides).

5. 10:45 KHLEBER HEBERDEN BEALL, Fort Worth, Tex.: "Hypothyrosis."

6. 11:00 CHAUNCEY WARREN DOWDEN, Louisville, Ky.: "Atypical Hyperthyroidism" (Lantern Slides).

7. 11:15 OLIVER C. MELSON, Professor of Medicine, University of Arkansas School of Medicine, Little Rock, Ark.: "Jaundice as a Symptom."

8. 11:30 HARVEY G. BECK, Professor of Clinical Medicine, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, Md.: "Tularemia: Fatal Case of Typhoid Form Caused by Ingestion of Rabbit: Autopsy Report" (Lantern Slides).

9. 11:45 R. FINLEY GAYLE, JR., Associate Professor of Nervous and Mental Diseases, Medical College of Virginia, Richmond, Va.: "Selective Human Sterilization."

10. 12:00 LEON UNGER, Assistant Professor of Medicine, Northwestern University Medical School, Chicago, Ill.: "The Treatment of Bronchial Asthma."

12:15—Adjourn for Lunch.

Tuesday, November 13, 2:00 p. m.

Plaza Hotel Ballroom

11. 2:00 HERBERT HILL, San Antonio, Tex.: "When is Insulin Dangerous?"

12. 2:15 MERTON M. MINTER, San Antonio, Tex.: "A Simple Technic for Bronchial Lavage" (Demonstration with Patient).

13. 2:30 SEALE HARRIS, Birmingham, Ala.: "Neurologic Hyperinsulinism."

14. 2:45 HYMAN I. GOLDSTEIN, Camden, N. J.: "Heredofamilial Angiomatosis with Recurring Hemorrhages, (Rendu-Osler-Weber's Disease)" (Lantern Slides).

15. 3:00 J. SHIRLEY SWEENEY, Assistant Professor of Clinical Medicine, Baylor University College of Medicine, Dallas, Tex.: "Autonomic Instability: Is It an Entity?"

16. 3:15 CHARLES TURNER STONE, Professor of Medicine, University of Texas School of Medicine, Galveston, Tex.: "The Clinical Importance of Cholesterol."

17. 3:30 ARTHUR W. WHITE, Professor of Clinical Medicine, University of Oklahoma School of Medicine, Oklahoma City, Okla.: "Peptic Ulcer."

18. 3:45 JAMES E. SHERMAN, El Paso, Tex.: "Diagnosis and Management of Anemia" (Lantern Slides).

19. 4:00 PAUL H. RINGER, Asheville, N. C.: "Outstanding Points in the Diagnosis of Pulmonary Tuberculosis."

20. 4:15 WILLIAM ALBERT DEARMAN, Gulfport, Miss.: "Pulmonary Moniliasis with Case Report."

21. 4:30 SILAS FULMER, Professor of Medicine, University of Arkansas School of Medicine, Little Rock, Ark.: "Undulant Fever."

22. 4:45 GIBBS MILLIKEN, Houston, Tex.: "Intravenous Vaccine in the Treatment of Chronic Arthritis."

23. 5:00 W. W. BONDURANT, San Antonio, Tex.: "The Bradycardias and the Tachycardias: Bedside Diagnosis and Treatment."

24. 5:15 JOE KOPECKY, San Antonio, Tex.: "Treatment of Circulatory Failure."

5:30—Adjourn.

CLINICAL SESSION—SURGICAL

GENERAL SURGERY

St. Anthony Hotel Ballroom

Program prepared by the President, Hugh Leslie Moore, Dallas, Texas. Witten B. Russ, San Antonio, presiding by invitation.

Each presentation will be limited strictly to a maximum of fifteen minutes.

Tuesday, November 13, 9:45 a. m.

St. Anthony Hotel Ballroom

1. 9:45 WITTEN B. RUSS, San Antonio, Tex.: Some remarks by the Chairman.

2. 10:00 FERDINAND PETER HERFF, San Antonio, Tex.: "Surgical Management of Destruction of the Common Bile Duct without Biliary Fistula" (Moving Pictures).

3. 10:15 FELIX P. MILLER, El Paso, Tex.: "Surgical Treatment of Pulmonary Tuberculosis."

4. 10:30 CHARLES SCOTT VENABLE, San Antonio, Tex.: "Surgical Treatment of Stasis in Ceco-Colon" (Lantern Slides).

5. 10:45 CHARLES W. FLYNN, Professor of Clinical Surgery, Baylor University College of Medicine, Dallas, Tex.: "Treatment of Trigeminal Neuralgia with Especial Reference to Alcoholic Injection" (Lantern Slides).

6. 11:00 CHARLES H. HARRIS, Fort Worth, Tex.: "Appendicitis with Definite Classification Showing Some of the Causes of the Increase in Mortality" (Lantern Slides).

7. 11:15 GILES A. COORS, Memphis, Tenn.: "Reconstructive Surgery of the Common Bile Duct with Report of a Case."

8. 11:30 IRVIN ABELL, Immediate Past-President, Southern Medical Association, and Clinical Professor of Surgery, University of Louisville School of Medicine, Louisville, Ky.: "Diagnosis and Treatment of Duodenal Ulcer."

9. 11:45 ISIDORE COHN, Professor of Clinical Surgery Tulane University School of Medicine, and Professor of Surgery, Tulane University Graduate School of Medicine, New Orleans, La.: "The Jaundiced Patient."

10. 12:00 JOHN H. BLACKBURN, Bowling Green, Ky.: "The Factors that Maintain the High Death Rate in Acute Appendicitis."

11. 12:15 CURTICE ROSSER, Professor of Proctology, Baylor University College of Medicine, Dallas, Tex.: "Cancer of the Anal Canal: An Analysis of Twenty-Five Cases."

12:30—Adjourn for Lunch.

Tuesday, November 13, 2:00 p. m.

St. Anthony Hotel Ballroom

12. 2:00 HOMER T. WILSON, San Antonio, Tex.: "Phlebitis."

13. 2:15 G. D. MAHON, Dallas, Tex.: "Breast Tumors."

14. 2:30 DUDLEY A. ROBNETT, Associate Professor of Pathology, University of Missouri School of Medicine, Columbia, Mo.: "Leukocyte Blood Picture in Surgical Types of Infection" (Lantern Slides).

15. 2:45 DEWELL GANN, Professor of Clinical Gynecology, University of Arkansas School of Medicine, Little Rock, Ark.: "A Study of Five Hundred Consecutive Cases of Appendicitis and Appendicoses."

16. 3:00 W. K. WEST, Associate Professor of Orthopedic Surgery, University of Oklahoma School of Medicine, Oklahoma City, Okla.: "Indications for the Use of Bone Graft."

17. 3:15 RALPH N. GREENE, Jacksonville, Fla.: "Some Remarks on the Treatment of Head Injury Cases" (Lantern Slides).

18. 3:30 JERE L. CROOK, Past-President, Southern Medical Association, Jackson, Tenn.: "Appendicitis Mortality: The Cause of Its Increase and the Means to Check It."

19. 3:45 JOSEPH E. HEARD, Shreveport, La.: "Surgery of the Phrenic Nerve and Thoracoplasty in the Treatment of Pulmonary Tuberculosis" (Lantern Slides).

20. 4:00 WALTER W. CRAWFORD, Past-President, Southern Medical Association, Hattiesburg, Miss.: "Wounds of the Heart: Case Reports."

21. 4:15 EDWARD JELKS, Jacksonville, Fla.: "Early Diagnosis of Gastro-Intestinal Cancer" (Lantern Slides).

22. 4:30 DUDLEY JACKSON and D. A. TODD, San Antonio, Tex.: "New Observations on Cancer and Hyperglycemia."

23. 4:45 JOHN GILLETT BURNS, Cuero, Tex.: "Observations on the Treatment of Appendical Peritonitis Based on Experience of Three Hundred and Twenty-One Cases of Acute Appendicitis."

24. 5:00 AMOS M. GRAVES, San Antonio, Tex.: "Indications for Alcohol Block of Sympathetic Nervous System."

5:15—Adjourn.

CLINICAL SESSION—OBSTETRICS AND GYNECOLOGY

Travis Park Methodist Sunday School Auditorium

Program prepared by the President, Hugh Leslie Moore, Dallas, Texas. Elbert Dunlap, Dallas, Texas, President, Texas Obstetrical and Gynecological Society, presiding by invitation.

Each presentation will be limited strictly to a maximum of twenty minutes.

Tuesday, November 13, 10:00 a. m.

Travis Park Methodist Sunday School Auditorium

1. 10:00 ELBERT DUNLAP, Professor of Gynecology, Baylor University College of Medicine, Dallas, Tex.: Some remarks by the Chairman.

2. 10:20 MINNIE C. O'BRIEN, San Antonio, Tex.: "The Pear Pessary in Labor Induction: Technic and Advantages of Its Use" (Lantern Slides).

3. 10:40 QUITMAN U. NEWELL, Associate Professor of Clinical Obstetrics and Gynecology, Washington University School of Medicine, St. Louis, Mo.: "Some Remarks on Carcinoma of the Corpus Uteri" (Lantern Slides).

4. 11:00 HARRY VERNON SIMS, Professor of Clinical Gynecology, Louisiana State University Medical Center, New Orleans, La.: "Sacral Analgesia in Gynecology."

5. 11:20 WALTER COLQUITT JONES, Miami, Fla.: "Prophylaxis of Shock."

6. 11:40 JAMES R. McCORD, Professor of Obstetrics and Gynecology, Emory University School of Medicine, Atlanta, Ga.: "Some Results from a Conservative Obstetrical Clinic" (Lantern Slides).

7. 12:00 CALVIN RICHARD HANNAH, Professor of Obstetrics, Baylor University College of Medicine, Dallas, Tex.: "The Prevention of Birth Injuries."

12:20—Adjourn for Lunch.

Tuesday, November 13, 2:00 p. m.

Travis Park Methodist Sunday School Auditorium

8. 2:00 BEN HILL PASSMORE, San Antonio, Tex.: "Cesarian Section in Pre eclampsia and Eclampsia."

9. 2:20 H. W. KOSTMAYER, Dean and Professor of Gynecology, Tulane University Graduate School of Medicine, New Orleans, La.: "Inflammation of the Uterine Cervix."

10. 2:40 WM. T. BLACK, Professor of Gynecology, University of Tennessee College of Medicine Memphis, Tenn.: "The Diagnosis and Treatment of Uterine Bleeding."

11. 3:00 PETER GRAFFAGNINO Professor of Gynecology, Louisiana State University Medical Center, New Orleans, La.: "Value of Presacral Sympathectomy in Gynecology."

12. 3:20 JOHN C. AYERS, Memphis, Tenn.: "The Complexity of the Endocrine Complex."

13. 3:40 HOMER L. PEARSON Miami, Fla.: "Meddlesome Obstetrics."

14. 4:00 GEORGE A. WILLIAMS, Assistant Professor of Gross Anatomy, Emory University School of Medicine, Atlanta, Ga.: "Prolonged Intense Heat in the Treatment of Pelvic Infection" (Lantern Slides).

15. 4:20 W. W. MAXWELL, San Antonio, Tex.: "Technic for Delivery of Persistent Occipitoposterior Position."

16. 4:40 P. I. NIXON and HENRY HARTMAN, San Antonio, Tex.: "Lutein Cell Carcinoma of the Ovary" (Lantern Slides).

17. 5:00 CHARLES C. CADE, San Antonio, Tex.: "Endometrioma of the Sigmoid Colon" (Moving Pictures).

5:20—Adjourn.

GENERAL PUBLIC SESSION

PRESIDENTS' NIGHT

Municipal Auditorium

Tuesday, November 13, 8:00 p. m.

Music.

Call to order by the Chairman of the Committee on Arrangements, J. Manning Venable, San Antonio.

Invocation: Rev. P. B. Hill, D.D., Pastor, First Presbyterian Church, San Antonio.

Address of Welcome in Behalf of the Bexar County Medical Society, W. S. Hamilton, President, San Antonio.

Address of Welcome in Behalf of the Texas State Medical Association, Sam E. Thompson, President, Kerrville.

Response to the Addresses of Welcome, Seale Harris, Past-President and Chairman, Board of Trustees, Southern Medical Association, Birmingham, Ala.

Introduction of President by the General Chairman.

Greetings, Walter L. Bierring, President, American Medical Association Des Moines, Iowa.

Greetings, Francisco de P. Miranda, President, National Academy of Medicine, Mexico City, Mexico.

Greetings, Chevalier Jackson, President, Pan-American Medical Association, Philadelphia, Pa.

Music.

Introduction of Presidents.

President's Address: "The Foundation of Longevity," Hugh Leslie Moore, Dallas, Tex.

New Business.

Announcements.

Adjournment for President's Reception and Ball.

Music.

LUNCHEON MEETING

Topic: STATE MEDICINE

Wednesday, November 14, 12:30 to 1:45 p. m.

Plaza Hotel Roof Garden

Dr. Edward H. Cary, Dallas Past-President, Southern Medical Association, presiding by invitation.

Dr. Richard E. Scammons, Dean of Medical Sciences, University of Minnesota, Minneapolis, Minnesota, will deliver the principle address, after which there will be a few minutes for questions and answers. Dr. Scammons is an unusually attractive speaker and is probably better informed on the subject of STATE MEDICINE than any one else in this country. All who can possibly do so should attend this luncheon. Price .75c per plate.

GENERAL CLINICAL SESSIONS

Plaza Hotel Ballroom

The President, Hugh Leslie Moore, Dallas, Texas, presiding.

Presentations will be limited strictly to a maximum of twenty-five minutes, with a three-minute intermission between each presentation except remarks of the President, which will be limited to fifteen minutes.

Wednesday, November 14, 9:15 a. m.

Plaza Hotel Ballroom

1. HUGH LESLIE MOORE, Dallas, Tex.: Remarks by the President.
2. ROBERT U. PATTERSON, Major General, Medical Corps, U. S. Army; The Surgeon General; Washington, D. C.: "Military Training of Medical Officers, Regular, Reserve and National Guard."
3. FRANK K. BOLAND, President, Southern Surgical Association, and Professor of Clinical Surgery, Emory University School of Medicine, Atlanta, Ga.: "The Interpretation of Abdominal Pain" (Lantern Slides).
4. JOSEPH L. BAER, Associate Clinical Professor of Obstetrics and Gynecology, Rush Medical School University of Chicago, Chicago, Ill.: "Some Phases of the Conduct of Labor" (Lantern Slides).
5. MILEY B. WESSON, President, American Urological Association, San Francisco, Calif.: "Urography and the General Practitioner" (Lantern Slides).
6. WILLIAM T. COUGHLIN, Professor of Surgery; St. Louis University School of Medicine, St. Louis, Mo.: "Surgical Relief of Pain About the Head and Face" (Lantern Slides).
7. GEORGE M. MacKEE Professor of Dermatology and Syphilology, New York Postgraduate Medical School and Hospital, New York, N. Y.: "Treatment of Skin Diseases by Physical Therapeutic Methods."

12:15—Adjourn for Lunch.

Wednesday, November 14, 2:00 p. m.

Plaza Hotel Ballroom

8. WILLIAM P. WHERRY, Professor of Otorhinolaryngology, University of Nebraska College of Medicine, Omaha, Nebraska: "Chronic Sinusitis from a General Practitioner's Viewpoint" (Lantern Slides).
9. WALTER L. BIERRING, President, American Medical Association, and Executive Officer, Iowa State Department of Health, Des Moines Iowa: "Heart Disease and the General Practitioner" (Lantern Slides).
10. FRANCISCO de P. MIRANDA, President, National Academy of Medicine of Mexico, Mexico City, Mexico: "The Physiology of Heart Failure."
11. BERNARD MYERS, C.M.G., M.D., F.R.C.P., London, England: "Reminiscences of Interesting Pediatric Clinical Cases."
12. JACQUES FORESTIER, Aix-les-Bains, France: "The Relief of Pains of the Locomotor System by Means of Local Injections of Lipiodol and Their Control by X-Rays" (Lantern Slides).
13. KENNON DUNHAM, President, National Tuberculosis Association, Cincinnati, Ohio: "Pulmonary Emphysema, an Important Sequela of Chronic Lung Lesions."
14. JAMES S. McLESTER, President-Elect, American Medical Association, Birmingham, Ala.: "Nutritional Failure as a Clinical Problem."
15. ALBERT H. ROWE, San Francisco, Calif.: "Food Allergy, a Common Problem in Practice" (Lantern Slides).

5:40—Adjourn.

LAST GENERAL SESSION

SHORT BUSINESS SESSION

St. Anthony Hotel Ballroom

The President, Hugh Leslie Moore, Dallas, Texas, presiding.

Friday, November 16, 12:00 noon

Report of Committee on Awards for Scientific Exhibits.

Presentation of Trophies of Golf and Trap Shooting Tournaments.

Report of Council.

New and Unfinished Business.

Report of Nominating Committee.

Election of Officers.

Presentation of newly elected officers.

(This last General Session is being held in the same room with the Section on Surgery and will follow immediately the adjournment of that section, if that section has not adjourned by 12:00 noon.)

SECTION ON MEDICINE

Plaza Hotel Ballroom

Officers

Chairman—Ernest B. Bradley, Lexington, Ky.
Vice-Chairman—George R. Herrmann, Galveston, Tex.
Secretary—Wm. B. Porter, Richmond, Va.

Hosts from the Bexar County Medical Society—H. C. Coburn, Jr. (Lt.-Col., M.C., U. S. Army), Joseph Kopecky and Edgar M. McPeak, San Antonio.

Thursday, November 15, 2:00 p. m.

Plaza Hotel Ballroom

1. "The Value of Hyperpyrexia in the Treatment of Bronchial Asthma," Kenneth Phillips, Miami, Fla.

   Discussion opened by Charles T. Stone, Galveston, Tex.; E. W. Griffey, Houston, Tex.

2. "Chronic Arthritis: Its Early Recognition and Management," W. Paul Holbrook, Tucson, Ariz.

   Discussion opened by J. Albert Key, St. Louis, Mo.

3. Chairman's Address: "Idiopathic Anemias of the Aplastic Type" (Lantern Slides), Ernest B. Bradley, Lexington, Ky.
4. "Rheumatic Heart Disease in Mexico," Ignacio Chavez, Mexico City, Mexico.
5. "Ulcerative Colitis: Etiology and Treatment," H. G. Rudner, Memphis, Tenn.

   Discussion opened by Thomas T. Mackie, New York, N. Y.; Lee Rice, San Antonio, Tex.

6. "Food Allergy and Other Food Factors in Angina Pectoris," G. Werley, El Paso, Tex.

   Discussion opened by J. H. Black, Dallas, Tex.; George R. Herrmann, Galveston, Tex.

Friday, November 16, 2:00 p. m.

Plaza Hotel Ballroom

7. "Hyperthyroidism Associated with Other Heart Diseases" (Lantern Slides), M. B. Whitten and G. D. Mahon, Dallas, Tex.

   Discussion opened by David W. Carter, Dallas, Tex.

8. "Syphilitic Lesions of the Kidney," George R. Herrmann and Wm. L. Marr, Galveston, Tex.

   Discussion opened by J. E. Paullin, Atlanta, Ga.

9. "The Treatment of Chronic Infectious Arthritis by Injections of Gold Salts," Jacques Forestier, Aix-les-Bains, France.

SYMPOSIUM ON DEFICIENCY DISEASES

10. (a) "The Newer Knowledge of Vitamins," John H. Musser, New Orleans, La.
    (b) "The Chemical Structure of Vitamins" (Lantern Slides), J. C. Forbes, Richmond, Va.
    (c) "Some Clinical Aspects of Dietary Deficiencies" (Lantern Slides), John B. Youmans, Nashville, Tenn.

    Discussion on Symposium opened by James S. McLester, Birmingham, Ala.

11. "The Treatment of Agranulocytosis: An Experimental Study" (Lantern Slides), Alvis E. Greer, Houston, Tex.

    Discussion opened by K. H. Beall, Fort Worth, Tex.

12. "The Application of Modern Methods in the Management of Pulmonary Tuberculosis Complicating Pregnancy" (Lantern Slides), Hollis E. Johnson, Nashville, Tenn.

    Discussion opened by Paul H. Ringer, Asheville, N. C.

    Election of Officers.

SECTION ON PEDIATRICS

Plaza Hotel Ballroom

Officers

Chairman—Oliver W. Hill, Knoxville, Tenn.
Vice-Chairman—N. C. Womack, Jackson, Miss.
Secretary—M. Hines Roberts, Atlanta, Ga.
Hosts from the Bexar County Medical Society—Lucius D. Hill, George B. Cornick and Mary Harper, San Antonio.

Tuesday, November 13

Texas Pediatric Society, Clinical Session. See page 959 for program.

Wednesday, November 14, 6:30 p. m.

Plaza Hotel

Dinner Session, joint activity of the Section on Pediatrics, Southern Medical Association, Texas Pediatric Society and American Academy of Pediatrics, Region 2.

"Heart in Children," Hugh McCulloch, Assistant Professor of Clinical Pediatrics, Washington University School of Medicine, St. Louis, Mo.

Thursday, November 15, 9:00 a. m.

Plaza Hotel Ballroom

1. "Hereditary Ectodermal Dysplasia, Anhidrotic Type" (Lantern Slides), Edwin G. Schwarz, Fort Worth, Tex.
   Discussion opened by M. A. Ramsdell, San Antonio, Tex.; F. Thos. Mitchell, Memphis, Tenn.
2. "Infantile Physio-Pathology" (Lantern Slides), Eusebio Guajardo, Dean and Professor of Pediatrics, University of Neuvo Leon School of Medicine, Monterrey, N.L., Mexico.
3. Chairman's Address: "The Role of the Pediatrician in the Prevention of Nervous and Mental Instability," Oliver W. Hill, Knoxville, Tenn.
4. "Whooping Cough: Its Early Diagnosis, Prevention and Treatment" (Lantern Slides), Louis W. Sauer, Evanston, Illinois.
5. "A Discussion of Postgraduate Pediatric Training," D. Lesesne Smith, Spartanburg, S. C.
   Discussion opened by Horton Casparis, Nashville, Tenn.; May Agnes Hopkins, Dallas, Tex.; Robert A. Strong, New Orleans, La.
6. "Further Observations on Juvenile Diabetics and Hyperinsulinism Cases," A. A. Herold, Shreveport, La.
   Discussion opened by Seale Harris, Birmingham, Ala.; David Greer, Houston, Tex.

Friday, November 16, 9:00 a. m.

Plaza Hotel Ballroom

7. "Routine Tuberculin Tests in Children," C. V. Rice, Muskogee, Okla.
   Discussion opened by Franklin P. Gengenbach, Denver, Colo.; J. A. Nunn, San Antonio, Tex.; P. E. Leucke, Dallas, Texas.
8. "Gastro intestinal Allergy in Children," Horton Casparis, Nashville, Tenn.
   Discussion opened by Ben H. Nicholson, Oklahoma City, Okla.; Warren Quillian, Miami, Fla.; George H. Garrison, Oklahoma City, Okla.
9. "The Effect of Dietary Change upon Urine Reaction," Frank C. Neff, Kansas City, Mo.
   Discussion opened by Neise F. Ockerblad, Kansas City, Mo.; Sidney Kaliski, San Antonio, Tex.
10. "Thyrotoxicosis in Children," C. J. Bloom, New Orleans, La.
    Discussion opened by William Weston, Columbia, S. C.; Alton Ochsner, New Orleans, La.; Lucius D. Hill, San Antonio, Tex.
11. "Pituitary Dwarfism: Further Report of Treatment with Growth Hormone," Henry H. Turner, Oklahoma City, Oklahoma.
    Discussion opened by Daniel L. Sexton, St. Louis, Mo.; Clifford G. Grulee, Chicago, Ill.
12. "The Cartoonist and Child Behavior," John Ruhrah, Baltimore, Md.
    Discussion opened by Leonard F. Bender, Philadelphia, Pa.; Elmer Lee Timmons, Colorado Springs, Colo.

Election of Officers.

SECTION ON GASTROENTEROLOGY

Gunter Hotel Pan-American Room

Officers

Chairman—Ernest H. Gaither, Baltimore, Md.
Vice-Chairman—Wm. Earl Clark, Washington, D. C.
Secretary—Frank D. Gorham, St. Louis, Mo.
Hosts from the Bexar County Medical Society—W. H. Cade, E. V. DePew and S. T. Lowry, San Antonio.

Thursday, November 15, 9:00 a. m.

Gunter Hotel Pan-American Room

1. Chairman's Address: "Gastric Carcinoma: A Clinical Research. Preoperative Course; Postoperative Results" (Lantern Slides), Ernest H. Gaither, Baltimore, Md.
2. "Phytobezoar Diospyri Virginianae" (Lantern Slides), Harry C. Schmeisser, Memphis, Tenn.
   Discussion opened by M. Pinson Neal, Columbia, Mo.; Victor E. Schulze, San Angelo, Tex.; L. W. Pollok, Temple, Texas.
3. "Clinical Observations on Nontropical Sprue" (Lantern Slides), Albert M. Snell, Assistant Professor of Medicine, University of Minnesota Graduate School of Medicine, Rochester, Minn.
   Discussion opened by Sidney K. Simon, New Orleans, La.; Edgar M. McPeak, San Antonio, Tex.
4. "Chronic Ulcerative Colitis," Lea A. Riely, Oklahoma City, Oklahoma.
   Discussion opened by Horace Reed, Oklahoma City, Okla.; Charles T. Stone, Galveston, Tex.
5. "The Colon: A Consideration of Its Important Diseases and Disordered Functions" (Lantern Slides), L. C. Sanders, Memphis, Tenn.
   Discussion opened by Daniel N. Silverman, New Orleans, La.; Seale Harris, Birmingham, Ala.
6. "Newer Aspects of So-Called Ptomaine Poisoning," J. L. Goforth, Dallas, Tex.
   Discussion opened by G. E. Brereton, Dallas, Tex.; B. F. Stout, San Antonio, Tex.

Friday, November 16, 9:00 a. m.

Gunter Hotel Pan-American Room

7. "A Discussion of the Essential Procedures Employed in the Diagnosis of Diseases of the Esophagus," E. B. Freeman, Baltimore, Md.
   Discussion opened by Harold E. Wright, Baltimore, Md.; H. G. Walcott, Dallas, Tex.
8. "Nervous Indigestion," Fred Wilkerson, Montgomery, Ala.
   Discussion opened by E. M. Mason, Birmingham, Ala.; Randolph Lyons, New Orleans, La.
9. "The Endocrines in Gastro-intestinal Disorders," Daniel L. Sexton, St. Louis, Mo.
   Discussion opened by Frank D. Gorham, St. Louis, Mo.; Henry H. Turner, Oklahoma City, Okla.
10. "Vitamin Therapy," James Alto Ward, Birmingham, Ala.
    Discussion opened by Roy H. Turner, New Orleans, La.; E. O. Rushing, Dallas, Tex.
11. "Motor and Secretory Dysfunction of the Gastro-intestinal Tract and the Vitamin B Factor: A Clinical Study," John B. Fitts, Atlanta, Ga.
    Discussion opened by E. V. DePew, San Antonio, Tex.; Virgil E. Simpson, Louisville, Ky.
12. "A Discussion of Dietetics and Dietetic Fads," J. E. Knighton, Shreveport, La.
    Discussion opened by Allan Eustis, New Orleans, La.; Lee Rice, San Antonio, Tex.

Election of Officers.

SECTION ON PATHOLOGY

St. Anthony Hotel Tapestry Room

Officers

Chairman—Harvey S. Thatcher, Little Rock, Ark.
Vice-Chairman—George T. Caldwell, Dallas, Tex.
Secretary—Wiley D. Forbus, Durham, N. C.

Hosts from the Bexar County Medical Society—B. F. Stout, Henry Hartman and J. M. Moore, San Antonio.

Thursday, November 15, 2:00 p. m.

St. Anthony Hotel Tapestry Room

1. Chairman's Address: "The Pathology of Avitaminosis," Harvey S. Thatcher, Professor of Pathology, University of Arkansas School of Medicine, Little Rock, Ark.
2. "The Necessity for Medico-Legal Investigations," V. G. Isvekov, Research Pathologist, State Hospital, Rusk, Tex.
3. "Typhus Fever in Southeast Texas," Seab J. Lewis, Beaumont, Tex.
4. "Unclassified Tumor of the Neck" (Lantern Slides), W. Forest Dutton and Norman C. Prince, Amarillo, Tex.
5. "Hemolytic Ictero-anemia with Infantilism: Report of Case" (Lantern Slides), Wann Langston, Professor of Clinical Medicine, University of Oklahoma School of Medicine, Oklahoma City, Okla.
6. "The Arterioles in Hypertension" (Lantern Slides), J. F. Pilcher and Edward H. Schwab, Departments of Pathology and Medicine, University of Texas School of Medicine, Galveston, Tex.
7. "Vascular Changes in the Glomerulus of the Kidney and the Effect on the Other Structures of the Nephron," L. A. Turley, Professor of Pathology, University of Oklahoma School of Medicine, Oklahoma City, Okla.

Friday, November 16, 2:00 p. m.

St. Anthony Hotel Tapestry Room

8. "Biopsy in Breast Tumors" (Lantern Slides), Joseph Colt Bloodgood, Adjunct Professor of Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.
9. "Adenofibroma (Fibroma-adenoma) Malignum of the Breast" (Lantern Slides), Max D. Lindsay and Harry C. Schmeisser, Department of Pathology, University of Tennessee School of Medicine, Memphis, Tenn.
10. "Tumors and Tumor-Like Conditions of the Lymphocyte, Myelocyte, Erythrocyte and Reticulum Cell" (Lantern Slides), George R. Callender, Fort Sam Houston, Tex.
11. "The Pathology of Milk Anemia" (Lantern Slides), Emmerich von Haam, Department of Pathology, Louisiana State University Medical Center, New Orleans, La.
12. "The Pathology of Agranulocytosis (Absolute Granulopenia)" (Lantern Slides), Jack C. Norris, Associate Professor of Pathology and Public Health, Emory University School of Medicine, Atlanta, Ga.
13. "Amebic Abscess of the Liver" (Lantern Slides), Pauline Williams, Associate Professor of Pathology, Medical College of Virginia, Richmond, Va.

Election of Officers.

SECTION ON ALLERGY

ALLERGY CLINIC AND ROUND TABLE

Organization Meeting

Acting Chairman, French K. Hansel, St. Louis, Mo.; Acting Secretary, Marion T. Davidson, Birmingham, Ala.; by invitation.

Wednesday, November 14, 9:00 a. m.

Gunter Hotel Oriental Room

9:00 *Clinic:* I. S. Kahn, San Antonio, Tex.

9:30 Symposium on Allergy:

1. "Some Problems in the Diagnosis and Treatment of Bronchial Asthma," B. Gelfand Efron, New Orleans, La.
2. "Allergic Headache," Warren T. Vaughan, Richmond, Va.
3. "Allergic Dermatitis," C. M. Stroud, St. Louis, Mo.
4. "Gastro-intestinal Allergy," J. P. Henry, Memphis, Tennessee.
5. "Gastro-intestinal Allergy with Duodenal Ulcer Syndrome," L. P. Gay, St. Louis, Mo.
6. "Allergic Purpura," C. H. Eyerman, St. Louis, Mo. (Special order for 11:30 a. m.)
7. "Pollinosis in the Southwest," Erle D. Sellers, Abilene, Texas.
8. "Practical Difficulties in Allergic Treatment," J. Alexander Clarke, Jr., Philadelphia, Pa.
9. "General Principles in the Treatment of Allergy," J. H. Black, Dallas, Tex.

Election of Officers.

If the program as given above is not concluded by time for luncheon, adjournment will be had for luncheon, and the program will be completed in the afternoon, beginning at 2:00 p. m. in the same room as the morning session.

It is expected that from this meeting a request will go to the Council of the Southern Medical Association to approve formally a Section on Allergy.

SECTION ON NEUROLOGY AND PSYCHIATRY

St. Anthony Hotel Tapestry Room

Officers

Chairman—W. W. Young, Atlanta, Ga.
Vice-Chairman—Frank H. Redwood, Norfolk, Va.
Secretary—J. H. Royster, Richmond, Va.

Hosts from the Bexar County Medical Society—J. A. McIntosh, Thos. M. Dorbandt and W. J. Johnson, San Antonio.

Thursday, November 15, 9:00 a. m.

St. Anthony Hotel Tapestry Room

1. Chairman's Address: "The Need for Broader Conception in Medicine," W. W. Young, Atlanta, Ga.
2. "The Diagnosis and Treatment of Chronic Subdural Hematoma" (Lantern Slides), Cleve C. Nash, Dallas, Tex.

   Discussion opened by Jas. A. Brown, Houston, Tex.; Amos M. Graves, San Antonio.
3. "The Importance of Psychiatric Examination in the Evaluation of Head Injury Sequelae," Titus H. Harris, Professor of Neurology and Psychiatry, University of Texas School of Medicine, Galveston, Tex.

   Discussion opened by Arthur J. Schwenkenberg, Dallas, Tex.; N. M. Owensby, Atlanta, Ga.
4. "The Occurrence of Different Types of Mental Changes in Brain Tumor" (Lantern Slides), Ernest Sachs, St. Louis, Missouri.

   Discussion opened by Archie D. Carr, St. Louis, Mo.; Edgar F. Fincher, Jr., Atlanta, Ga.
5. "Neurologic and Psychotic Symptoms Associated with Endocrine Disorders," Howard R. Masters, Richmond, Va.

   Discussion opened by H. Mason Smith, Tampa, Fla.; C. J. Slocum, Beacon, N. Y.

Friday, November 16, 9:00 a. m.

St. Anthony Hotel Tapestry Room

6. "The Mechanisms of the Corpus Striatum and the Cerebellum in Muscular Action," James Greenwood, Houston, Tex.

   Discussion opened by John A. McIntosh, San Antonio, Tex.; Titus H. Harris, Galveston, Tex.
7. "Clinical Examples of Indirect Suicide," Karl Menninger, Topeka, Kan.
8. "A Treatment for Neuropsychiatric Syndromes Employing Twilight Narcosis," A. L. Skoog, Kansas City, Mo.

   Discussion opened by Carrol C. Turner, Memphis, Tenn.; T. L. Moody, San Antonio, Tex.

9. "The Conflict and Physical Symptoms," M. S. Gregory, Oklahoma City, Okla.

Discussion opened by Niels L. Anthonissen, Belmont, Mass.

Election of Officers.

SECTION ON RADIOLOGY

Gunter Hotel Oriental Room

Officers

Chairman—Vincent W. Archer, University, Va.
Vice-Chairman—Daniel D. Talley, Jr., Richmond, Va.
Secretary—Franklin B. Bogart, Chattanooga, Tenn.

Hosts from the Bexar County Medical Society—W. M. Barron, George M. Edwards (Lt.-Col., M.C., U. S. Army), and Milton Davis, San Antonio.

Thursday, November 15, 2:00 p. m.

Gunter Hotel Oriental Room

1. "X-Ray Diagnosis of Polyps, Cysts and Tumors of the Nasal Sinuses," Claude Moore, Washington, D. C.

Discussion opened by Eugene V. Powell, Temple, Tex.; Charles Capp, San Antonio, Tex.

2. "X-Ray Treatment of Chronic Non-Suppurative Osteomyelitis" (Lantern Slides), John T. Murphy, Toledo, Ohio.

3. "The Importance of Thickened Apical Pleura in Apparently Normal Individuals," Robert J. Reeves, Durham, N. C.

Discussion opened by Kennon Dunham, Cincinnati, Ohio; John E. Heatley, Oklahoma City, Okla.

4. "Treatment of Mikulitz Disease" (Lantern Slides), Fred M. Hodges, Richmond, Va.

Discussion opened by R. T. Wilson, Temple, Tex.; H. D. Gray, Memphis, Tenn.

5. "Nine Years' Experience with Gallbladder Visualization" (Lantern Slides), Davis Spangler, Dallas, Tex.

Discussion opened by W. G. McDeed, Houston, Tex.; George M. Edwards, Fort Sam Houston, Tex.

Friday, November 16, 12:30 p. m.

Section Luncheon, Gunter Hotel Army Room, followed by round table discussion.

Friday, November 16, 2:00 p. m.

Gunter Hotel Oriental Room

6. "Radiation Therapy of Carcinoma of the Breast," R. G. Giles, Temple, Tex.

Discussion opened by J. M. Martin, Dallas, Tex.; J. Cash King, Memphis, Tenn.

7. Chairman's Address: "Undulant Fever with Report of a Case Simulating Pott's Disease" (Lantern Slides), Vincent W. Archer, University, Va.

8. *Section Clinic*, conducted by John T. Murphy, Toledo, Ohio.

(a) "Intestinal Tuberculosis." Case furnished and reported by W. S. Hamilton, San Antonio.

(b) "Asthma Complicated by So-Called Sinus Bronchus Disease." Case furnished and reported by George M. Edwards (Lt.-Col., M.C., U. S. Army), Fort Sam Houston.

(c) (1) "Tuberculosis of the Symphysis Pubis," and (2) Glandular Derangement." Case furnished and reported by Milton Davis, San Antonio.

9. "The Diagnosis of Diverticulitis and Diverticulosis of the Colon with Special Reference to the Roentgen Study of These Conditions" (Lantern Slides), C. P. Rutledge, Shreveport, La.

Discussion opened by R. K. McHenry, Houston, Tex.; B. C. Garrett, Shreveport, La.

10. "The Use of Roentgen Ray Therapy in Infections," Ralph E. Myers, Oklahoma City, Okla.

Discussion opened by I. Warner Jenkins, Waco, Tex.; Chas. H. Heacock Memphis, Tenn.

Election of Officers.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

Gunter Hotel Oriental Room

Officers

Chairman—Thomas W. Murrell, Richmond, Va.
Vice-Chairman—J. N. Roussel, New Orleans, La.
Secretary—Charles C. Dennie, Kansas City, Mo.

Hosts from the Bexar County Medical Society—R. H. Crockett, J. L. Pipkin and E. B. Ritchie, San Antonio.

Tuesday and Wednesday, November 13 and 14

Texas Dermatological Society, host to Dermatological Conference of the Mississippi Valley. See page 959 for complete program.

Wednesday, November 14, 8:00 p. m.

Dermatological Smoker, St. Anthony Hotel. Informal talks by visiting dermatologists.

Thursday, November 15, 9:00 a. m.

Gunter Hotel Oriental Room

1. Chairman's Address: "The Dermatologist and the New Deal," Thomas W. Murrell, Richmond, Va.

2. "Bullous Impetigo of the New Born," Daniel Truett Gandy, Houston, Tex.

Discussion opened by M. T. Van Studdiford, New Orleans, Louisiana.

3. "Xanthoma Diabeticorum" (Lantern Slides), Ewell I. Thompson, Little Rock, Ark.; Eugene Stevenson and Fred Krock, Fort Smith, Ark.

Discussion opened by J. C. Michael, Houston, Tex.; R. S. Weiss, St. Louis, Mo.

4. "The Treatment of Creeping Eruptions" (Lantern Slides), J. Lee Kirby-Smith, Jacksonville, Fla.

Discussion opened by Bedford Shelmire, Dallas, Tex.; C. O. King, Birmingham, Ala.

5. "The Dermonecrotic Properties of Staphylococcus Filtrates" (Lantern Slides), Paul F. Stookey and L. A. Scarpellino, Kansas City, Mo.

6. "Prognosis of Syphilis," C. P. Bondurant, Oklahoma City, Oklahoma.

Discussion opened by R. W. Fowlkes, Richmond, Va.

7. "Neurosyphilis," Paul Arthur O'Leary, Professor of Dermatology and Syphilology, University of Minnesota Graduate School of Medicine, Rochester, Minn.

Friday, November 16, 9:00 a. m.

Gunter Hotel Oriental Room

8. "Epithelioma of the Skin and Oral Mucous Membranes" (Lantern Slides), J. K. Howles, New Orleans, La.

Discussion opened by Charles C. Dennie, Kansas City, Mo.

9. "Treatment of Skin Cancer," Everett C. Fox and Bedford Shelmire, Dallas, Tex.

Discussion opened by Dudley C. Smith, University, Va.

10. "Leprosy and Its Treatment with Attenuated Virus of Anthrax," J. N. Roussel, New Orleans, La.

Discussion opened by Thomas W. Murrell, Richmond, Va.

11. "Ringworm of the Scalp: Treatment of Microsporon Infection with Specific Culture Filtrate" (Lantern Slides), Leslie M. Smith, El Paso, Tex.

Discussion opened by C. F. Lehmann, San Antonio, Tex.

12. "Contact Dermatitis," M. F. Engman, Jr., St. Louis, Mo.

Discussion opened by Jack W. Jones, Atlanta, Ga.

13. "The Effect of Therapy on the Course of Syphilis," Thomas B. Hall, Kansas City, Mo.

Discussion opened by W. J. Young, Louisville, Ky.

Election of Officers.

SECTION ON SURGERY

St. Anthony Hotel Ballroom

Officers

Chairman—Daniel C. Elkin, Atlanta, Ga.
Vice-Chairman—Carrington Williams, Richmond, Va.
Secretary—Alton Ochsner, New Orleans, La.
Hosts from the Bexar County Medical Society—W. M. Wolf, G. A. Pagenstecher and J. W. Nixon, San Antonio.

Thursday, November 15, 9:00 a. m.

St. Anthony Hotel Ballroom

1. "Factors Conditioning the Transmission of Syphilis by Blood Transfusion," Hugh J. Morgan, Nashville, Tenn.

   Discussion opened by Charles C. Green, Houston, Tex.; Amos M. Graves, San Antonio, Tex.

2. "Open Operation for Fractures: Indications and Method" (Lantern Slides), Howard Mahorner, New Orleans, La.

   Discussion opened by H. Earle Conwell, Birmingham, Ala.; Peter M. Keating, San Antonio, Tex.

3. "Empyema in Children with an Analysis of 103 Cases" (Lantern Slides), J. M. Mason, Birmingham, Ala.

4. "Empyema: Rib Resection with Drainage versus Non-Open Method: Report of Three Cases" (Lantern Slides), D. C. Donald, Birmingham Ala.

   Discussion on papers of Dr. Mason and Dr. Donald opened by Deryl Hart, Durham, N. C.; J. W. Nixon, San Antonio, Texas.

5. "Surgical Care of Patients in the Extremes of Life" (Lantern Slides), John J. Morton, Professor of Surgery, University of Rochester, and Surgeon-in-Chief, Strong Memorial Hospital, Rochester, N. Y.

6. "Cancer of Face and Oral Cavity: Surgery versus Radiation" (Lantern Slides), A. O. Singleton, Galveston, Texas.

   Discussion opened by Ellis Fischel, St. Louis, Mo.; Charles S. Venable, San Antonio, Texas.

Friday, November 16, 9:00 a. m.

St. Anthony Hotel Ballroom

7. Chairman's Address: "Thoracic Injuries" (Lantern Slides), Daniel C. Elkin, Atlanta, Ga.

8. "The Repair of Surface Defects with Thick Split Skin Grafts" (Lantern Slides), Barrett Brown, St. Louis, Mo.

   Discussion opened by Neal Owens, New Orleans, La.; H. L. D. Kirkham Houston, Tex.

9. "The Innervation of Muscles of the Abdomen with Reference to Surgical Incisions" (Lantern Slides), Charles S. White, Washington, D. C.

   Discussion opened by K. H. Aynesworth, Waco, Tex.; Charles W. Flynn, Dallas, Tex.

10. "Congenital Pyloric Stenosis of the New-Born" (Lantern Slides), B. C. Garrett, Shreveport, La.

    Discussion opened by R. A. Strong, New Orleans, La.; W. B. Russ, San Antonio Tex.

11. "Hemolytic Jaundice" (Lantern Slides), George Lewis, Little Rock, Ark.

    Discussion opened by Isidore Cohn, New Orleans, La.; Gustave A. Pagenstecher, San Antonio, Tex.

Election of Officers.

SECTION ON BONE AND JOINT SURGERY

Gunter Hotel Pan-American Room

Officers

Chairman—H. Earle Conwell, Birmingham, Ala.
Vice-Chairman—J. Warren White, Greenville, S. C.
Secretary—Guy A. Caldwell, Shreveport, La.
Hosts from the Bexar County Medical Society—P. M. Keating, E. A. Cayo and T. E. Christian, San Antonio.

Wednesday, November 14, 2:00 p. m.

Gunter Hotel Pan-American Room

Orthopedic Clinic by local orthopedists, sponsored by the Texas Orthopedic Society, Dr. P. M. Keating, President, San Antonio. See page 959 for program.

Thursday, November 15, 2:00 p. m.

Gunter Hotel Pan-American Room

1. "A Bone Brace to Prevent Toe Drop in Paralytics: Preliminary Report" (Lantern Slides), F. C. Goodwin, El Paso, Tex.

   Discussion opened by J. I. Mitchell, Memphis, Tenn.; O. L. Miller, Charlotte, N. C.; J. W. Goode, San Antonio, Tex.

2. "End-Results of Leg Lengthening" (Lantern Slides), G. Bruce Stephenson, Shreveport, La.

   Discussion opened by J. H. Kite, Decatur, Ga.; Frank D. Dickson, Kansas City, Mo.

3. "Bone Tumors," Robt. D. Schrock, Professor of Orthopedic Surgery, University of Nebraska Medical School, Omaha, Nebraska.

4. "Acute Fractures of the Spine, with Special Reference to Treatment and End-Results: Report of Three Hundred Cases" (Lantern Slides), C. W. Stallard, Montgomery, West Va.

   Discussion opened by Fred G. Hodgson, Atlanta, Ga.; P. M. Keating, San Antonio, Tex.; F. A. Jostes, St. Louis, Mo.

5. "Treatment of Fractures in the Neck of the Femur with the Smith-Peterson Nail: Description of a New Technic for Placing the Smith-Peterson Nail," W. B. Carrell, Dallas, Texas.

   Discussion opened by George Bennett, Baltimore, Md.; E. A. Cayo, San Antonio, Tex.; E. S. Hatch, New Orleans, Louisiana.

6. Chairman's Address: "Syphilis of the Clavicle," H. Earle Conwell, Birmingham, Ala.

Friday, November 16, 2:00 p. m.

Gunter Hotel Pan-American Room

7. "Dog Ear Plaster Splint in Injuries about the Elbow with Model Demonstration," E. Laurence Scott, Birmingham, Ala.

   Discussion opened by H. T. Simon, New Orleans, La.; Earl D. McBride, Oklahoma City, Okla.; R. W. Billington, Nashville, Tenn.

8. "Fractures of the Patella" (Lantern Slides), Willis C. Campbell, Memphis, Tenn.

   Discussion opened by Melvin S. Henderson, Rochester, Minn.; T. E. Christian, San Antonio, Tex.; Joseph E. Stewart, St. Louis, Mo.; J. T. O'Ferrall, New Orleans, La.

9. "Astragalectomy: Indications and Results," Jose Castro Villagrana, Mexico City, Mexico.

10. "Synovectomy in Chronic Arthritis of the Knee Joint." Solomon D. David, Houston, Tex.

    Discussion opened by R. W. Johnson, Baltimore Md.; J. Albert Key, St. Louis, Mo.; J. W. White, Greenville, S. C.

11. *Section Clinic*, conducted by Frank D. Dickson, Kansas City, Missouri.

    (a) "Old Compression Fracture of the Spine." Case furnished and reported by J. W. Goode, San Antonio.

    (b) "Fracture of the Calcaneus." Case furnished and reported by T. E. Christian, San Antonio.

    (c) "Deformity of Both Lower Extremities Due to Burns." Case furnished and reported by E. A. Cayo, San Antonio.

    (d) "Polycystic Disease Involving the Hip." Case furnished and reported by P. M. Keating, San Antonio.

Election of Officers.

SECTION ON GYNECOLOGY

St. Anthony Hotel Ballroom

Officers

Chairman—John W. Turner, Atlanta, Ga.
Vice-Chairman—Elbert Dunlap, Dallas, Tex.
Secretary—Lee F. Turlington, Birmingham, Ala.

Hosts from the Bexar County Medical Society—P. I. Nixon, C. C. Cade and A. G. Cowles, San Antonio.

Wednesday, November 14, 2:00 p. m.

St. Anthony Hotel Ballroom

1. "Trichomona Vaginalis Vaginitis and Monilia Albicans as Causes of Leukorrhea" (Lantern Slides and Moving Pictures), Karl John Karnaky, Houston, Tex.

   Discussion opened by Willard R. Cooke, Galveston, Tex.: Elbert Dunlap, Dallas, Tex.

2. Chairman's Address: "Progress and Problems in Gynecology," John W. Turner, Atlanta, Ga.

3. "Leukoplakic Vulvitis and Kraurosis Vulvae." Wm. Hans Vogt, Professor of Gynecology and Obstetrics, St. Louis University School of Medicine, St. Louis, Mo.

   Discussion opened by Calvin R. Hannah, Dallas, Tex.; Edward Speidel, Louisville, Ky.

4. "Suppuration of Dermoid Cyst Following Labor" (Lantern Slides), Charles R. Robins, Professor of Gynecology, Medical College of Virginia, Richmond, Va.

   Discussion opened by Hilliard E. Miller, New Orleans, La.; C. J. Andrews, Norfolk, Va.

5. "Important Considerations in Prevention of Carcinoma of the Cervix." Wendell McLean Long, Oklahoma City, Okla.

   Discussion opened by M. Y. Dabney, Birmingham, Ala.; P. I. Nixon, San Antonio, Tex.

6. "Five Hundred Laparotomies in Negro Women." Edgar H. Greene, Assistant Professor of Gynecology, Emory University School of Medicine, Atlanta, Ga.

   Discussion opened by James R. McCord, Atlanta, Ga.; D. M. Rumph, Fort Worth, Tex.

   Election of Officers.

Friday, November 16, 2:00 p. m.

Joint Session with Section on Obstetrics

St. Anthony Hotel Ballroom

7. *Section Clinic*, Obstetrical Cases, conducted by George W. Kosmak, Editor, *The American Journal of Obstetrics and Gynecology*, New York, N. Y.
   (a) "Placenta Praevia." Case furnished and reported by W. H. Hargis, San Antonio.
   (b) "Abruptio Placentae with Concealed Hemorrhage." Case furnished and reported by J. R. Dillard, San Antonio.
   (c) "Postpartum Hemorrhage." Case furnished and reported by I. T. Cutter, San Antonio.

8. *Section Clinic*, Gynecological Cases, conducted by Wm. Hans Vogt, Professor of Gynecology and Obstetrics, St. Louis University School of Medicine, St. Louis, Mo.
   (a) "Chocolate Cyst of the Ovary." Case furnished and reported by Frank L. Paschal, San Antonio.
   (b) "Fibroids of the Uterus." Case furnished and reported by Edwin L. Mueller, San Antonio.
   (c) "Prolapse of the Uterus." Case furnished and reported by Roy T. Goodwin, San Antonio.

9. "Therapeutic Considerations of Incomplete Abortion and Miscarriage: Analysis of 521 Cases," T. M. Boulware, Birmingham, Ala.

   Discussion opened by Charles D. O'Keefe, St. Louis, Mo.; R. L. Grogan, Fort Worth, Tex.

SECTION ON OBSTETRICS

St. Anthony Hotel Ballroom

Officers

Chairman—W. T. Pride, Memphis, Tenn.
Vice-Chairman—Richard Paddock, St. Louis, Mo.
Secretary—Warren E. Massey, Dallas, Tex.

Hosts from the Bexar County Medical Society—I. T. Cutter, B. H. Passmore and W. H. Maxwell, San Antonio.

Thursday, November 15, 2:00 p. m.

St. Anthony Hotel Ballroom

1. Chairman's Address: "Obstetrical Progress During the Past Twenty-Five Years," W. T. Pride, Memphis, Tenn.

2. "Obstetrics as a Community Problem," George W. Kosmak, Editor, *The American Journal of Obstetrics and Gynecology*, New York, N. Y.

3. "An Infant Hygiene Program and the Relationship of Infant Mortality to a Maternal Hygiene Program: Results of Eight Years' Work in Williamson County, Tennessee" (Lantern Slides), E. L. Bishop, State Commissioner of Health, Nashville, Tenn.

   Discussion opened by S. R. Norris, Jacksonville, Fla.; Willard R. Cooke, Galveston, Tex.

4. "Conservative Management of Labor," J. B. Eskridge, Jr., Oklahoma City, Okla.

   Discussion opened by George A. Mayer, New Orleans, La.; Herman W. Johnson, Houston, Tex.

5. "Home Deliveries," Merle E. Smith, America, Ala.

   Discussion opened by R. M. Anderson, Shawnee, Okla.; H. Reid Robinson, Galveston, Tex.

6. "Analysis of 151 Consecutive Fetal and Neonatal Deaths During an Eight-Year Period at the Southern Baptist Hospital of New Orleans" (Lantern Slides), Thomas Benton Sellers, New Orleans, La.

   Discussion opened by Quitman U. Newell, St. Louis, Mo.; William A. Fowler, Fayetteville, Ark.

7. "The Toxemias of Pregnancy and Certain Deficiency Diseases," Robert A. Ross, Durham, N. C.

   Discussion opened by E. C. Hamblen, Durham, N. C.; J. L. Seibold, Birmingham, Ala.

   Election of Officers.

Friday, November 16, 2:00 p. m.

Joint Session with Section on Gynecology

St. Anthony Hotel Ballroom

8. *Section Clinic*, Obstetrical Cases, conducted by George W. Kosmak, Editor, The *American Journal of Obstetrics and Gynecology*, New York, N. Y.
   (a) "Placenta Praevia." Case furnished and reported by W. H. Hargis, San Antonio.
   (b) "Abruptio Placentae with Concealed Hemorrhage." Case furnished and reported by J. R. Dillard, San Antonio.
   (c) "Postpartum Hemorrhage." Case furnished and reported by I. T. Cutter, San Antonio.

9. *Section Clinic*, Gynecological Cases, conducted by Wm. Hans Vogt, Professor of Gynecology and Obstetrics, St. Louis University School of Medicine, St. Louis, Mo.
   (a) "Chocolate Cyst of the Ovary." Case furnished and reported by Frank L. Paschal, San Antonio.
   (b) "Fibroids of the Uterus." Case furnished and reported by Edwin L. Mueller, San Antonio.
   (c) "Prolapse of the Uterus." Case furnished and reported by Roy T. Goodwin, San Antonio.

10. "Therapeutic Considerations of Incomplete Abortion and Miscarriage: Analysis of 521 Cases" (Lantern Slides), T. M. Boulware, Birmingham, Ala.

    Discussion opened by Charles D. O'Keefe, St. Louis, Mo.; R. L. Grogan, Fort Worth, Tex.

SECTION ON UROLOGY

Travis Park Methodist Annex Auditorium

Officers

Chairman—Montague L. Boyd, Atlanta, Ga.
Vice-Chairman—Joseph F. Geisinger, Richmond, Va.
Secretary—B. Weems Turner, Houston, Tex.

Hosts from the Bexar County Medical Society—R. R. Ross, J. R. Nicholson and R. L. Davis, San Antonio.

Thursday, November 15, 2:00 p. m.

Travis Park Methodist Annex Auditorium

1. Chairman's Address: Montague L. Boyd, Atlanta, Ga.
2. "Congenital Solitary Kidney," R. A. Hennessey, Memphis, Tennessee.
   Discussion opened by Rex R. Ross, San Antonio, Tex.
3. "Carcinoma of the Prostate: Case Reports" (Lantern Slides), R. E. Cone, Galveston, Tex.
   Discussion opened by Raleigh L. Davis, San Antonio, Tex.
4. "The Report of a Case of Bilateral Complete Ureteral and Pelvic Reduplication with Ectopic Supernumerary Ureteral Orifice on the Right Side without Incontinence and with Communication Between the Two Right Ureters" (Lantern Slides), E. H. Fite, Muskogee, Okla.
5. "Hyroplastic Kidney Complicated by Stone in the Other Kidney," P. G. Gamble, Greenville, Miss.
   Discussion opened by R. M. Willoughby, New Orleans, La.
6. "The Effect of the Ketogenic Diet on Infections of the Urinary Tract." Anson L. Clark, Hiram D. Moor and Donald C. Harrel, Oklahoma City, Okla.
   Discussion opened by R. S. Mallard, Fort Worth, Tex.
7. "Injuries to the Ureters." K. D. Lynch, El Paso, Tex.
   Discussion opened by E. G. Ballenger, Atlanta, Ga.

Friday, November 16, 2:00 p. m.

Travis Park Methodist Annex Auditorium

8. "My Experience in Five Hundred and Seventy-Five Transurethral Electric Resections in Various Types of Bladder Neck Obstruction" (Lantern Slides), H. L. Kretschmer, Clinical Professor of Genito-Urinary Surgery, Rush Medical College University of Chicago, Chicago, Ill.
   Discussion opened by Nelse F. Ockerblad, Kansas City, Mo.
9. "Transurethral Prostatic Resection with Report of Seven Hundred and Fifty Cases," T. M. Davis, Greenville, S. C.
   Discussion opened by Miley B. Wesson, San Francisco, Calif.
10. "Anatomical and Pathological Studies of Prostate and Vesical Neck." Rex E. Van Duzen, Dallas, Tex.
    Discussion opened by Montague L. Boyd, Atlanta, Ga.
11. "True Prostatic Calculi. Removal by Transurethral Surgery" (Lantern Slides), Hamilton W. McKay, Charlotte, N. C.
    Discussion opened by George R. Livermore, Memphis, Tenn.
12. "Vesico-Vaginal and Urethro-Vaginal Fistulae" (Lantern Slides), E. W. Bertner, Houston, Tex.
    Discussion opened by W. T. Black, Memphis, Tenn.
13. "Proliferative Lesions of the Female Urethra" (Lantern Slides), H. W. E. Walther and R. M. Willoughby, New Orleans, La.
    Discussion opened by A. I. Folsom, Dallas, Tex.
14. "Post Anal Gut Cyst with Urinary Retention, Cured by Formalin Injection," F. S. Schoonover, Fort Worth, Tex.
    Discussion opened by Perry Bromberg, Nashville, Tenn.

Election of Officers.

SECTION ON RAILWAY SURGERY

Gunter Hotel Pan-American Room

Officers

Chairman—S. O. Black, Spartanburg, S. C.
Vice-Chairman—W. N. Blount, Laurel, Miss.
Secretary—J. W. Palmer, Ailey, Ga.

Hosts from the Bexar County Medical Society—C. E. Scull, F. N. Haggard and W. H. Hargis, San Antonio.

Wednesday, November 14, 9:00 a. m.

Gunter Hotel Pan American Room

1. "Does High Blood Pressure Alone Justify Retiring an Employee from Service?" O. F. Gober, Temple, Tex.
   Discussion opened by Frank N. Haggard, San Antonio, Tex.; W. H. Hargis, San Antonio, Tex.
2. Chairman's Address: "Traumatic Ulnar Neuritis" (Lantern Slides), Samuel Orr Black, Spartanburg, S. C.
3. "The Relation of Trauma to Abortion, Premature Labor and Menstrual Disorders," Lucius E. Burch, Nashville, Tenn.
   Discussion opened by W. B. Russ, San Antonio, Tex.; Cecil Newell, Chattanooga, Tenn.
4. "Treatment of Fractures of the Neck of the Femur" (Lantern Slides), Melvin S. Henderson Professor of Orthopedic Surgery, University of Minnesota Graduate School of Medicine, Rochester, Minn.
5. "Hernia, an Important Factor in the Railway Employee," Charles C. Green, Houston, Tex.
   Discussion opened by E. B. Parsons, Palestine, Tex.; A. Philo Howard, Houston, Tex.
6. "Advantages and Disadvantages in Doing Railway Surgery," T. M. Aderhold, El Reno, Okla.
   Discussion opened by C. E. Scull, San Antonio, Tex.; Fred S. Hardy, Ardmore, Okla.

Election of Officers.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

St. Marks Episcopal Church Parish House

Officers

Chairman—Dunbar Roy, Atlanta, Ga.
Vice-Chairman—Karl S. Blackwell, Richmond, Va.
Secretary—William A. Wagner, New Orleans, La.

Hosts from the Bexar County Medical Society—D. T. Atkinson, Charles J. Boehs and E. D. Dumas, San Antonio.

Monday and Tuesday, November 12 and 13

Texas Ophthalmological and Otolaryngological Society. See page 958 for program.

Wednesday, November 14, 9:30 a. m.

St. Marks Episcopal Church Parish House

1. Chairman's Address: "Some Unsolved Problems in Ophthalmology and Otolaryngology," Dunbar Roy, President, American Laryngological Society, Atlanta, Ga.
2. "The Curability of Cancer of Larynx," Chevalier Jackson, Professor of Bronchoscopy and Esophagoscopy, Temple University School of Medicine, Philadelphia, Pa.
3. "Lid Control Sutures in the Intracapsular Operation for Senile Cataract" (Lantern Slides), Joseph L. McCool, Clinical Professor of Ophthalmology, University of California Medical School, San Francisco, Calif.
4. "Latent Brain Abscess Secondary to Sphenoid Sinusitis, with Case Report," Mozart A. Lischkoff, Pensacola, Fla.
   Discussion opened by J. Calhoun McDougall, Atlanta, Ga.; R. E. Parrish, San Antonio, Tex.
5. "The Common Ocular Phorias and Their Management." Wm. B. Clark, New Orleans, La.
   Discussion opened by E. C. Ellett, Memphis, Tenn.; W. R. Buffington, New Orleans, La.

6. "Some Cranial Nerve Considerations of Practical Interest," Joseph D. Heitger, Louisville, Ky.

Discussion opened by E. King Gill, San Antonio, Tex.; J. B. Costen, St. Louis, Mo.

Thursday, November 15, 9:00 a. m.

St. Marks Episcopal Church Parish House

7. "Malignancy of the Upper Maxilla," Homer Dupuy, New Orleans, La.

Discussion opened by John T. Crebbin, Shreveport, La.; Charles J. Boehs, San Antonio, Tex.

8. "Secondary Glaucoma," Edwin W. Burton, Charlottesville, Va.

Discussion opened by Speight Jenkins, Dallas, Tex.

9. "Bronchoscopy and Esophagoscopy, with Presentation of Some Interesting Problems" (Lantern Slides and Moving Pictures), Sidney Israel, Houston, Tex.

Discussion opened by Cecil Greer, Rosenberg, Tex.; Charles S. Alexander, Houston, Tex.

10. "What the General Practitioner Might Profitably Know About the Eyes," John O. McReynolds, Dallas, Tex.

Discussion opened by Stephen Schuster, El Paso, Tex.

11. "Simplified Technic of Nasal Septum Submucous Operation," George E. Davis, Emeritus Professor of Otolaryngology, New York Polyclinic Medical School and Hospital, New York, N. Y.

Discussion opened by A. F. Clark, San Antonio, Tex.; Lucien S. Gaudet, Natchez, Miss.

Friday, November 16, 9:00 a. m.

St. Marks Episcopal Church Parish House

12. "Further Observations on Prenatal Medication as a Possible Etiologic Factor in Deafness in the New-Born," H. Marshall Taylor, Jacksonville, Fla.

Discussion opened by T. W. Moore, Huntington, West Va.; E. Meredith Sykes, San Antonio, Tex.; Herman W. Johnson, Houston, Tex.

13. "Allergic Ocular Manifestations," Meyer Wiener, St. Louis, Missouri.

Discussion opened by Ray K. Daily, Houston, Tex.; R. K. Simpson (Major, M.C., U. S. Army), Randolph Field, Tex.

14. "Allergic Conjunctivitis," Ray M. Balyeat and Ralph Bowen, Oklahoma City, Okla.

Discussion opened by D. T. Atkinson, San Antonio, Tex.

15. "The So-Called Hidden Type of Mastoiditis as a Causative Factor of Diarrhea in Infancy," Charles K. Lewis, Memphis, Tenn.

Discussion opened by J. D. Thompson, Port Arthur, Tex.; Oscar M. Marchman, Dallas, Tex.

16. "Diathermy in Diseases of the Eye, Ear, Nose and Throat" (Lantern Slides), Henry L. Hilgartner, Jr., Austin, Tex.

Discussion opened by Royal Reynolds (Lt.-Col., M.C., U. S. Army), Fort Sam Houston, Tex.

Election of Officers.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

St. Marks Episcopal Church Parish House

ROUND TABLE SESSIONS

Chairman Program Committee—William D. Gill, San Antonio, Texas.

Thursday, November 15, 2:00 p. m.

St. Marks Episcopal Church Parish House

OPHTHALMOLOGY

1. "The Orthoptic and Surgical Treatment of Comitant Squint," William Thornwall Davis, Washington, D. C.

2. "I. Rhinogenic Tumors Involving the Orbit; II. Rhinologic Aspects of Dacryocystitis; III. Orbital and Retro-orbital Complications of Sinus Disease (Based on Thirty-Five Years' Experience in Practice)," Joseph C. Beck, Chicago, Illinois.

3. "The Incidence of Refractive Error," Adna G. Wilde, Jackson, Miss.

Friday, November 16, 2:00 p. m.

St. Marks Episcopal Church Parish House

OTOLARYNGOLOGY

4. "Some Observations Concerning Laryngeal Neoplasms," John H. Foster, Houston, Tex.

5. "The Association of Middle Ear Infection and Deafness with Sinusitis," M. M. Cullom, Nashville, Tenn.

6. "The Development of Sinuses in Children," T. E. Carmody, Denver, Colo.

SECTION ON PUBLIC HEALTH

Travis Park Methodist Sunday School Auditorium

Officers

Chairman—Leon Banov, Charleston, S. C.
Vice-Chairman—H. S. Mustard, Baltimore, Md.
Secretary—Douglas L. Cannon, Montgomery, Ala.

Hosts from the Bexar County Medical Society—W. A. King, T. N. Goodson and Daniel Saenz, San Antonio.

Wednesday, November 14, 2:00 p. m.

Travis Park Methodist Sunday School Auditorium

Program arranged by the San Antonio Department of Public Health, by invitation, as a joint activity of the Section on Public Health, Southern Medical Association, and the Southern Branch, American Public Health Association. W. A. King, City Health Officer, San Antonio, presiding.

1. "Some of the Public Health Problems in Texas and How They Are Being Met," John W. Brown, State Health Officer, Austin, Tex.

2. "Public Health Problems in Cities Having a Large Mexican Population," T. J. McCamant, Director, City-County Health Unit, El Paso, Tex.

3. "Typhus Fever in Texas," S. W. Bohls, Director of Laboratories, State Department of Health, Austin, Tex.

4. "Diphtheria Immunization," A. H. Flickwir, City Health Officer, Fort Worth, Tex.

5. "The Prevailing Reduction in Public Health Budgets in Texas and What Is to Be Done About It," J. W. Bass, Public Health Director, Dallas, Tex.

Thursday, November 15, 9:00 a. m.

Travis Park Methodist Sunday School Auditorium

1. "The Pellagra Problem in the South" (Lantern Slides), Charles D. Reece, Director Bureau of Communicable Disease Control and Epidemiology, State Department of Health, Austin, Tex.

Discussion opened by M. D. Levy, Houston, Tex.

2. "The Prevention of Pneumonic Plague" (Lantern Slides), Fred J. Wampler, Professor of Preventive Medicine, Medical College of Virginia, Richmond, Va.

Discussion opened by A. Rumreich, U.S.P.H.S., Washington, D. C.

3. "Typhoid Control Program and the Result of Twelve Years' Work in Williamson County, Tennessee" (Lantern Slides), W. C. Williams, Director, Local Health Service, State Department of Public Health, Nashville, Tenn.

Discussion opened by J. D. Dowling, Birmingham, Ala.

4. "Pertinent Health Activities in Progress in Louisiana," J. A. O'Hara, President, State Department of Health, New Orleans, La.

Discussion opened by J. N. Baker, Montgomery, Ala.

5. "An Enlarged Nursing Program and Maternal Mortality," Henry Hanson, State Health Officer, Jacksonville, Fla.

Discussion opened by Irl C. Riggin, Richmond, Va.

Friday, November 16, 9:00 a. m.

Travis Park Methodist Sunday School Auditorium

6. Chairman's Address: "The Practical Side of Public Health," Leon Banov, Charleston, S. C.

7. "Basic Principles in the Administration of Rural Health Organization," W. K. Sharp, Jr., Regional Consultant, Tennessee Valley Authority, Knoxville, Tenn.

Discussion opened by K. E. Miller, U.S.P.H.S., Austin, Tex.

8. "The Importance of the Private Physician in a Public Health Program," John A. Milne, Supervisor of Field Unit, Mississippi State Board of Health, Jackson, Miss.

Discussion opened by D. V. Galloway, Meridian, Miss.; H. C. Ricks, Jackson, Miss.

9. "The Newer Management of the Diphtheria Carrier," I. S. Barksdale, Commissioner of Health, Greenville, S. C.

Discussion opened by Claude E. Watson, Dallas, Tex.

10. "The Problem of Rabies," W. B. Grayson, State Health Officer, Little Rock, Ark.

Discussion opened by Felix J. Underwood, Jackson, Miss.

11. "Some Important Factors in the Prevention of Tuberculosis," Sam E. Thompson, Kerrville, Tex.

Discussion opened by A. E. Greer, Houston, Tex.; L. H. Reeves, Fort Worth, Tex.

Election of Officers.

AMERICAN PUBLIC HEALTH ASSOCIATION, SOUTHERN BRANCH

Tuesday, St. Anthony Hotel Tapestry Room

Wednesday, Travis Park Methodist Sunday School Auditorium

Officers

President—Arthur T. McCormack, Louisville, Ky.
First Vice-President—(Mr.) George H. Hazlehurst, Montgomery, Alabama.
Second Vice-President—H. C. Ricks, Jackson, Miss.
Third Vice-President—Miss Lucy Minnegerode, R.N., Washington, D. C.
Secretary-Treasurer—G. F. McGinnes, Richmond, Va.
Hosts from the Bexar County Medical Society—W. E. Nesbit, C. J. Koerth and George R. Callender (Lt.-Col., Medical Corps, U. S. Army), San Antonio.

Tuesday, November 13, 10:00 a. m.

St. Anthony Hotel Tapestry Room

1. President's Address: "The Objectives and Possibilities of the Public Health Movement to the South," A. T. McCormack, State Health Commissioner, Louisville, Ky.

2. "Public Health Administration in Mexico and the Sanitary Code of 1934," Michael E. Bustamente, Chief, Bureau of Federal Health in the Mexican States, Mexico City, Mexico.

3. "Tuberculosis Control," I. C. Riggin, State Health Commissioner, Richmond, Va.

4. "Trend of Maternal Mortality in Sunflower County, Mississippi," H. C. Ricks, State Department of Health, Jackson, Mississippi.

Discussion opened by Felix J. Underwood, Executive Officer, State Department of Health, Jackson, Miss.; John L. Milne, Supervisor of County Health Work, State Department of Health, Jackson, Miss.

Tuesday, November 13, 12:30 p. m.

Meeting of the Governing Council, A. T. McCormack, President, presiding.

Tuesday, November 13, 2:00 p. m.

St. Anthony Hotel Tapestry Room

5. "Tennessee Valley Authority," E. L. Bishop, State Health Commissioner, and President, American Public Health Association, Nashville, Tenn.

6. "Newer Approaches in Health Education" (Lantern Slides), Henry F. Vaughan (Dr. P.H.), Member, Board of Trustees, W. K. Kellogg Foundation, and Commissioner of Health, Detroit, Mich.

7. "The Use of the Graduate Nurse without Public Health Training in Emergency Public Health Work," Pearl McIver, R.N., United States Public Health Service, Washington, D. C.

8. "CWA-ERA Malaria Control Program in the South," L. L. Williams, Jr., United States Public Health Service, Washington, D. C.

Discussion opened by Mark F. Boyd, Rockefeller Foundation, Tallahassee, Fla.; E. L. Bishop, State Health Commissioner, Nashville, Tenn.

9. "Recent Sanitary Improvement Projects with Public Funds," V. M. Ehlers, C.E., Chief Sanitary Engineer State Department of Health, Austin, Tex.

Discussion opened by (Mr.) H. E. Miller, United States Public Health Service, Washington, D. C.; (Mr.) George Bote, United States Public Health Service, New Orleans, Louisiana.

Wednesday, November 14, 9:30 a. m.

Travis Park Methodist Sunday School Auditorium

10. "Depression Effects on Typhoid Epidemics," J. N. Baker, State Health Officer; D. G. Gill, Department of Public Health; and (Mr.) G. H. Hazlehurst, C.E., Department of Public Health, Montgomery, Ala.

Discussion opened by (Mr.) H. A. Kroeze, Director, Bureau of Sanitary Engineering, State Department of Health, Jackson, Miss.

11. "The Efficacy of Typhoid Prophylaxis in the United States Army," Robert U. Patterson, Major General, Medical Corps, United States Army; The Surgeon General; Washington, D. C.

12. "The Efficacy of Typhoid Prophylaxis in the United States Navy," S. S. Cook, Lieutenant Commander, Medical Corps, United States Navy; In Charge, Division of Preventive Medicine; Washington, D. C.

Discussion opened by Thomas F. Sellers, State Department of Public Health, Atlanta, Ga.

13. "Syphilis Problems," R. W. Fowlkes, Richmond, Va.

Discussion opened by J. A. Crabtree, State Department of Public Health, Nashville, Tenn.

Business Meeting.

Wednesday, November 14, 2:00 p. m.

Travis Park Methodist Sunday School Auditorium

Program prepared by the San Antonio Department of Public Health, by invitation, as a joint activity of the American Public Health Association, Southern Branch, and the Section on Public Health, Southern Medical Association. W. A. King, City Health Officer, San Antonio, presiding.

1. "Some of the Public Health Problems in Texas and How They Are Being Met," John W. Brown, State Health Officer, Austin, Tex.

2. "Public Health Problems in Cities Having a Large Mexican Population," T. J. McCamant, Director, City-County Health Unit, El Paso, Tex.

3. "Typhus Fever in Texas," S. W. Bohls, Director of Laboratories, State Department of Health, Austin, Tex.

4. "Diphtheria Immunization," A. H. Flickwir, City Health Officer, Fort Worth, Tex.

5. "The Prevailing Reduction in Public Health Budgets in Texas and What Is to Be Done About It," J. W. Bass, Public Health Director, Dallas, Tex.

NATIONAL MALARIA COMMITTEE

Travis Park Methodist Sunday School Auditorium

Officers

Honorary Chairman—L. O. Howard, Washington, D. C.
Chairman—Henry Hanson, Jacksonville, Fla.
Chairman-Elect—L. L. Williams, Jr., Washington, D. C.
Vice-Chairman—F. C. Bishopp, Washington, D. C.
Secretary-Treasurer—Mark F. Boyd, Tallahassee, Fla.

Hosts from the Bexar County Medical Society—Henry N. Leopold, George R. Callender (Lt.-Col., M.C., U. S. Army), and M. M. Minter, San Antonio.

Wednesday, November 14, 2:00 p. m.

Plaza Hotel, Private Dining Room on Roof

Business Session. Henry Hanson, Chairman, presiding. Consideration of regular and special business, reports of standing subcommittees, etc.

Thursday, November 15, 2:00 p. m.

Travis Park Methodist Sunday School Auditorium

Joint Session with the American Society of Tropical Medicine, Henry Hanson, Chairman, National Malaria Committee, and Frederick F. Russell, President, American Society of Tropical Medicine, presiding.

1. "Natural Immunity and Susceptibility of Culicine Mosquitoes to Avian Malaria" (Lantern Slides), (Mr.) Clay G. Huff, University of Chicago, Chicago, Ill.

   Discussion opened by Mark F. Boyd, Tallahassee, Fla.

2. "Intravenous Toxicity of Atabrine" (Lantern Slides), Wendell Gingrich, E. D. Hollar and W. T. Dawson, Departments of Bacteriology and Pharmacology, University of Texas School of Medicine, Galveston, Tex.

   Discussion opened by J. P. Sanders, Caspania, La.

3. "Further Studies of Malaria in Panama, with Reference to Control with Atabrine and Plasmochin" (Lantern Slides), Herbert C. Clark, Gorgas Memorial Laboratory, and W. H. W. Komp, U.S.P.H.S., Panama, Republic of Panama.

4. "Treatment of Malaria with a Short Course of Quinidine" (Lantern Slides), J. P. Sanders, Caspania, La.

   Discussion opened by Wilfred T. Dawson, University of Texas School of Medicine, Galveston, Tex.

5. "*Plasmodium* ovale Considered as a Modification of *P. vivax* Produced by Long Residence in the Human Host" (Lantern Slides), Arnaldo Giovannola, Italian Institute of Public Health, Rome, Italy.

   Discussion opened by Charles F. Craig, Tulane University School of Medicine, New Orleans, La.

6. "The Malaria Parasites of Lower Monkeys" (Lantern Slides), H. W. Mulligan, Captain, Indian Medical Service, Kasauli, India.

   Discussion opened by Herbert C. Clark, Gorgas Memorial Laboratory, Panama, Republic of Panama.

7. "Studies of Malaria Infection and Comparative Abundance of the Philippine Anophelines of the *Minimus* Group," (Mr.) Willard V. King, U. S. Bureau of Entomology, Orlando, Florida.

8. "How Many Species of Avian Parasites Are There?" (By title), Reginald D. Manwell, Syracuse University College of Medicine, Syracuse, N. Y.

9. "The Small Spleen in Malaria Surveys," (By title), Paul F. Russell, Rockefeller Foundation, New York, N. Y.

Friday, November 16, 2:00 p. m.

Travis Park Methodist Sunday School Auditorium

Henry Hanson, Chairman, presiding

10. Chairman's Address: "Need for Continued Research," Henry Hanson, State Health Officer, Jacksonville, Fla.

11. "Some Phases of the Malaria Problem in Mexico," Carlos C. Hoffman, Professor of Parasitology, National University of Mexico School of Medicine, Mexico City, Mexico. (By invitation.)

12. "Malaria Control in Panama," Frederick L. Hoffman, Consulting Statistician, Prudential Life Insurance Company, Newark, N. J.

13. "The Control of Malaria in Jamaica, British West Indies," B. E. Washburn, International Health Division, Rockefeller Foundation, Kingston, Jamaica, British West Indies. (By invitation.)

14. "The Insectary Rearing of *Anopheles quadrimaculatus*," Mark F. Boyd, (Mr.) T. L. Cain, Jr., and (Mr.) J. A. Mulrennan, Station for Malaria Research, Tallahassee, Fla.

15. "The Effect of an Increased Burden of Phagocytosis Upon the Natural as Compared with the Acquired Immunity to Bird Malaria," (Mr.) Wendell Gingrich, Department of Medicine, University of Texas School of Medicine, Galveston, Tex.

    Discussion opened by H. W. Mulligan, Captain, Indian Medical Service, Kasauli, India.

16. "Actual Photography of Life Cycle Stages of the Malaria Parasites in the Mosquito" (Moving Picture with Lecture), Bruce Mayne, Malaria Expert, U.S.P.H.S., Columbia, S. C., and Warner Bros. Studio, New York, N. Y.

17. "Accomplishments in Mosquito Control in the CWA Projects Directed by the Bureau of Entomology" (Lantern Slides), F. C. Bishopp, U. S. Bureau of Entomology, Washington, D. C.

    Discussion opened by L. L. Williams, Jr., U.S.P.H.S., Washington, D. C.

AMERICAN SOCIETY OF TROPICAL MEDICINE

Officers

President—Frederick F. Russell, New York, N. Y.
President-Elect—E. B. Vedder, Washington, D. C.
Vice-President—F. W. O'Connor, New York, N. Y.
Secretary-Treasurer—Henry E. Meleney, Nashville, Tenn.
Editor—Charles F. Craig, New Orleans, La.
Councilors—G. R. Callender, G. C. Shattuck, E. C. Faust, H. C. Clark, T. B. Magath, S. S. Cook, E. B. McKinley and A. C. Reed.

Hosts from the Bexar County Medical Society—George R. Callender (Lt.-Col., Medical Corps, U. S. Army), R. E. Scott and Carlos Urrutia, San Antonio.

Wednesday, November 14, 2:00 p. m.

St. Anthony Hotel Tapestry Room

1. "A Clinical Study of Intestinal Fungi," Alfred C. Reed and Herbert G. Johnstone Pacific Institute of Tropical Medicine, University of California, San Francisco, Calif.

   Discussion opened by Richard P. Strong, Harvard University Medical School, Boston, Mass.

2. "Infectious Intertrigo" (Lantern Slides), James K. Howles, Louisiana State University Medical Center, New Orleans, Louisiana.

   Discussion opened by J. C. Michael, Houston, Tex.

3. "Experimental Torula in Monkeys" (Lantern Slides), John F. Kessel, University of Southern California School of Medicine, Los Angeles, Calif.

4. "Sprue: Roentgenologic Changes in the Small Intestine" (Lantern Slides), Thomas T. Mackie and D. K. Miller, Cornell University Medical College, New York, N. Y.

   Discussion opened by Alfred C. Reed, University of California Medical School, San Francisco, Calif.

5. "Quantitative Studies of the Virus and Immune Serum Used in Vaccination Against Yellow Fever," Max Theiler and Loring Whitman, Rockefeller Foundation, New York, N. Y.

   Discussion opened by Frederick F. Russell, Rockefeller Foundation, New York, N. Y.

6. "Embryonic and Tumor Tissues as Culture Media for Microorganisms of Rat Leprosy" (Lantern Slides), Ernest L. Walker and Marion A. Sweeney, Pacific Institute of Tropical Medicine, University of California, San Francisco, Calif.

   Discussion opened by Earl B. McKinley, George Washington University School of Medicine, Washington, D. C.

7. "Brucellosis in Man: Treatment with a New Antiserum" (Lantern Slides), W. B. Wherry, A. E. O'Neill and Lee Foshay, University of Cincinnati College of Medicine, Cincinnati, Ohio.

   Discussion opened by E. B. Vedder, George Washington University School of Medicine, Washington, D. C.

8. "Relapsing Fever in Texas. V: A Survey of the Epidemiology and Clinical Manifestations of the Disease as it Occurs in Texas" (Lantern Slides), Hardy A. Kemp, W. H. Moursund and Harry E. Wright, Baylor University College of Medicine, Dallas, Tex.

   Discussion opened by Henry T. Newman, Austin, Tex.

9. "Coccidia in Man" (Lantern Slides), Thomas B. Magath, Mayo Foundation, Rochester, Minn.

   Discussion opened by Charles A. Kofoid, University of California, Berkeley, Calif.

10. "American Trypanosomiasis in Native and Laboratory Animals of California" (Lantern Slides and Moving Pictures), Charles A. Kofoid and Faye D. Wood, University of California, Berkeley, Calif.

11. "The Significance of the Diphtheroids in Lesions of Leprosy," (By title), Earl B. McKinley, George Washington University School of Medicine, Washington, D. C.

Thursday, November 15, 9:00 a. m.

Travis Park Methodist Annex Auditorium

12. "Further Observations on the Pathogenicity of Certain Strains of *Endamoeba histolytica* for Kittens" (Lantern Slides), Henry E. Meleney and William W. Frye, Vanderbilt University School of Medicine, Nashville, Tenn.

    Discussion opened by E. B. Vedder, George Washington University School of Medicine, Washington, D. C.

13. "The Survival of *Entamoeba histolytica* Outside the Human Host" (Lantern Slides), Francis W. O'Connor and C. R. Hulse, Columbia University College of Physicians and Surgeons, New York, N. Y.

    Discussion opened by Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn.

14. "Food Handlers and the Epidemiology of Amebiasis," Herbert G. Johnstone and Margaret K. Iverson, Pacific Institute of Tropical Medicine, University of California, San Francisco, Calif.

    Discussion opened by Charles F. Craig, Tulane University School of Medicine, New Orleans, La.

15. "Plumbing in Relation to Infectious Diseases" (Lantern Slides), Herman N. Bundesen, Board of Health, Chicago, Illinois.

    Discussion opened by Thomas B. Magath, Mayo Foundation, Rochester, Minn.

16. "Amebic Dysentery: the Exudate as a Guide to Treatment" (Lantern Slides), George R. Callender, Medical Corps, U. S. Army, Fort Sam Houston, Tex.

    Discussion opened by Charles F. Craig, Tulane University School of Medicine, New Orleans, La.

17. "Systemic Invasive Aspects of Amebiasis" (Lantern Slides), Charles A. Kofoid, University of California School of Medicine, Berkeley, Calif.

    Discussion opened by Herbert C. Clark, Gorgas Memorial Laboratory, Panama, R. de P.

18. "A Review of Work on the Rate of Acquisition and Loss of Hookworms" (Lantern Slides), Asa C. Chandler, Rice Institute, Houston, Tex.

    Discussion opened by Gibbs Milliken, Houston, Tex.

19. "Studies on the Dog Heartworm, *Dirofilaria immitis*, with Special Reference to Filarial Periodicity" (Lantern Slides), E. Harold Hinman, Louisiana State University Medical Center, New Orleans, La.

    Discussion opened by Francis W. O'Connor, Columbia University, New York, N. Y.

20. "Important Factors Operative in Reducing Hookworm Disease in the United States Since 1902" (By title), Charles W. Stiles, United States Public Health Service (Retired), Washington, D. C.

21. "Clinical Experience with African Sleeping Sickness," (By title), George W. Thorne, San Francisco, Calif.

Thursday, November 15, 12:00 noon

Plaza Hotel Roof Garden

Luncheon of the Society

22. President's Address: "The Educational Background for the Practice of Tropical Medicine," Frederick F. Russell, Rockefeller Foundation, New York, N. Y.

Thursday, November 15, 2:00 p. m.

Travis Park Methodist Sunday School Auditorium

Joint Session with the National Malaria Committee, Frederick F. Russell, President, American Society of Tropical Medicine, and Henry Hanson, Chairman, National Malaria Committee, presiding.

23. "Natural Immunity and Susceptibility of Culicine Mosquitoes to Avian Malaria" (Lantern Slides), (Mr.) Clay G. Huff, University of Chicago, Chicago, Ill.

    Discussion opened by Mark F. Boyd, Rockefeller Foundation, Tallahassee, Fla.

24. "Intravenous Toxicity of Atabrine" (Lantern Slides), Wendell Gingrich, E. D. Hollar and W. T. Dawson, Departments of Bacteriology and Pharmacology, University of Texas School of Medicine, Galveston, Tex.

    Discussion opened by J. P. Sanders, Caspania, La.

25. "Further Studies of Malaria in Panama, with Reference to Control with Atabrine and Plasmochin" (Lantern Slides), Herbert C. Clark, Gorgas Memorial Laboratory, and W. H. W. Komp, U.S.P.H.S., Panama, Republic of Panama.

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    Discussion opened by Wilfred T. Dawson, University of Texas School of Medicine, Galveston, Tex.

27. "*Plasmodium* ovale Considered as a Modification of *P. vivax* Produced by Long Residence in the Human Host" (Lantern Slides), Arnaldo Giovannola, Italian Institute of Public Health, Rome, Italy.

    Discussion opened by Charles F. Craig, Tulane University School of Medicine, New Orleans, La.

28. "The Malaria Parasites of Lower Monkeys" (Lantern Slides), H. W. Mulligan, Captain, Indian Medical Service, Kasauli, India.

    Discussion opened by Herbert C. Clark, Gorgas Memorial Laboratory, Panama, Republic of Panama.

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30. "How Many Species of Avian Malarial Parasites Are There?" (By title), Reginald D. Manwell, Syracuse University College of Medicine, Syracuse, N. Y.

31. "The Small Spleen in Malaria Surveys," (By title), Paul F. Russell, Rockefeller Foundation, New York, N. Y.

Friday, November 16, 9:00 a. m.

Travis Park Methodist Annex Auditorium

32. "The Weil-Felix Reaction in Rocky Mountain Spotted Fever and Its Relation to Certain Other Typhus-like Diseases" (Lantern Slides), Gordon E. Davis, U.S.P.H.S., Hamilton, Montana.

    Discussion opened by Hardy A. Kemp, Baylor University School of Medicine, Dallas, Tex.

33. "Contribution to the History of the Epidemics of Yellow Fever in the Republic of Mexico" (Lantern Slides), Juan Graham Casasus, Department of Public Health, Mexico City, Mexico.

34. "The Histopathology of Strongyloides Infection" (Lantern Slides), E. Carroll Faust, Tulane University School of Medicine, New Orleans, La.

    Discussion opened by Francis W. O'Connor, Columbia University College of Physicians and Surgeons, New York, New York.

35. "Principles of Chemotherapy in Relation to Tropical Medicine" (Lantern Slides), Chauncey D. Leake, University of California Medical School, San Francisco, Calif.

    Discussion opened by Alfred C. Reed, University of California Medical School, San Francisco, Calif.

36. "Variation of Cosmopolitan Diseases in Tropical and Temperate Zones," Albert E. Larsen, Institute of Tropical Medicine, University of California, San Francisco, Calif.

    Discussion opened by Earl B. McKinley, George Washington University School of Medicine, Washington, D. C.

37. "Selvatic (Wild Rodent) Plague in California" (Moving Pictures), Karl F. Meyer, Institute of Tropical Medicine, University of California, San Francisco, Calif.

38. "Psittacosis" (Moving Pictures), Karl F. Meyer, Institute of Tropical Medicine, University of California, San Francisco, California.

Business Session.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE, SOUTHERN SECTION

Gunter Hotel Army Room

Officers

Chairman—Charles F. Craig, New Orleans, La.
Vice-Chairman—Mayer Bodansky, Galveston, Tex.
Secretary—Roy H. Turner, New Orleans, La.

Hosts from the Bexar County Medical Society—Dudley Jackson, D. A. Todd and I. S. Kahn, San Antonio.

Wednesday, November 14, 9:30 a. m.

Gunter Hotel Army Room

1. "The Nutritional Value of Human Milk, Cow's Milk and Goat Milk" (Lantern Slides), E. von Haam, Department of Pathology, and H. Beard, Department of Biochemistry, Louisiana State University Medical Center, New Orleans, Louisiana.
2. "The Effect of Thyroxin Injections on the Plumage of the Guinea Fowl," Mary Hardesty, Department of Biology, Newcomb College, New Orleans, and Whitman Laboratory of Experimental Zoology, University of Chicago, New Orleans, La.
3. "On the Nature of the Specific Reacting Substance of *B. proteus X-19* in the Weil-Felix Reaction," Hardy A. Kemp, Department of Bacteriology, Hygiene and Preventive Medicine, Baylor University College of Medicine, Dallas, Tex.
4. "The Morphological and Tinctorial Behavior of the *B. leprae* During Its Adaptation to an *in vitro* Habitat," Charles W. Duval, Department of Pathology and Bacteriology, Tulane University School of Medicine, New Orleans, La.
5. "Some Experimental and Clinical Studies in Heart Muscle Metabolism," George R. Herrmann, George Decherd and Philippa Klippel, Department of the Practice of Medicine, University of Texas School of Medicine, Galveston, Tex.
6. "The Influence of Certain Foodstuffs on the Lesions of *Endamoeba histolytica* Infection," Ernest Carroll Faust, L. C. Scott and J. C. Swartzwelder, Department of Tropical Medicine, Tulane University School of Medicine, New Orleans, La.
7. "Antipyretic Action of Cinchona Alkaloids in the Normal Guinea Pig," O. Bondansky and W. T. Dawson, Department of Pharmacology, University of Texas School of Medicine, Galveston, Tex.
8. "Influence of Site of Subcutaneous Injection upon Toxicity Figures," W. T. Dawson and H. P. Harms, Department of Pharmacology, University of Texas School of Medicine, Galveston, Tex.
9. "Toxicity of Quinine, Quinidine, Hydroquinidine and Hydrocinchonidine in the Guinea Pig," H. P. Harms and W. T. Dawson, Department of Pharmacology, University of Texas School of Medicine, Galveston, Tex.
10. "Creatine Content of the Heart in Experimental Cardiac Hypertrophy," M. Bodansky and J. F. Pilcher, Department of Pathological Chemistry, University of Texas School of Medicine, Galveston, Tex.

SECTION ON MEDICAL EDUCATION

Gunter Hotel Army Room

Officers

Chairman—Earl B. McKinley, Washington, D. C.
Vice-Chairman—George T. Caldwell, Dallas, Tex.
Secretary—Ernest W. Goodpasture, Nashville, Tenn.

Hosts from the Bexar County Medical Society—W. W. Bondurant, H. M. Bush and John D. Gleckler, San Antonio.

Wednesday, November 14, 2:00 p. m.

Gunter Hotel Army Room

1. Chairman's Address: "The Responsibility of Medical Education to the Public and the Medical Profession," Earl B. McKinley, Dean and Professor of Bacteriology, George Washington University School of Medicine, Washington, District of Columbia.
2. "Some Phases of Medical Education in Mexico," Ignacio Chavez, Mexico City, Mexico.
3. "The Value of the Pathological Museum in the Teaching of Medicine" (Lantern Slides), Emmerich von Haam, Assistant Professor of Pathology, Louisiana State University Medical Center, New Orleans, La.
4. "Elective Course in the Medical Curriculum," John H. Musser, Professor of Medicine, Tulane University of Louisiana School of Medicine, New Orleans, La.
5. "Hospital Teaching," R. Q. Goodwin, Assistant Professor of Medicine, University of Oklahoma School of Medicine, Oklahoma City, Okla.
6. "A Two Years' Experiment in Psychiatric Teaching in the University of Louisville School of Medicine," Spafford Ackerly, Associate Professor of Psychiatry, University of Louisville School of Medicine, Louisville, Ky.
7. "The Teaching of Hygiene to Medical Students," Roscoe R. Spencer, United States Public Health Service, and Associate Professor of Hygiene and Preventive Medicine, George Washington University School of Medicine, Washington, District of Columbia.

Election of Officers.

WOMAN'S AUXILIARY TO THE SOUTHERN MEDICAL ASSOCIATION

ELEVENTH ANNUAL MEETING

Headquarters and Meeting Place: St. Anthony Hotel

General Officers

President—Mrs. Southgate Leigh, Norfolk, Va.
President-Elect—Mrs. J. Bonar White, Atlanta, Ga.
First Vice-President—Mrs. J. Allison Hodges, Richmond, Va.
Second Vice-President—Mrs. L. L. Polk, Purvis, Miss.
Recording Secretary—Mrs. Wm. Lett Harris, Norfolk, Va.
Corresponding Secretary—Miss Emily Allen, Norfolk, Va.
Treasurer—Mrs. Oliver W. Hill, Knoxville, Tenn.
Historian—Mrs. Seale Harris, Birmingham, Ala.
Parliamentarian—Mrs. Preston Hunt, Texarkana, Tex.

Committees

Memorial—Mrs. Frank N. Haggard, Chairman, San Antonio, Tex.
Research—Mrs. S. A. Collom, Chairman, Texarkana, Tex.
Jane Todd Crawford Memorial—Mrs. C. W. Garrison, Chairman, Little Rock, Ark.
Resolutions—Mrs. James N. Brawner, Chairman, Atlanta, Ga.
Organization—Mrs. J. Bonar White, Chairman, Atlanta, Ga.
Budget—Mrs. Webster B. Majors, Chairman, Birmingham, Ala.
Publicity—Mrs. Arthur A. Herold, Chairman, Shreveport, La.
Custodian of Records—Mrs. A. T. McCormack, Chairman, Louisville, Ky.
Advisory from the Southern Medical Association—Dr. E. H. Cary, Dallas, Tex.; Dr. Seale Harris, Birmingham, Ala.; and Dr. Southgate Leigh, Norfolk, Va.

Tuesday, November 13

St. Anthony Hotel Patio

Executive Board Luncheon, 12:30 p. m., Mrs. Southgate Leigh, President, presiding, followed by Business Session. (Luncheon .75c per plate.)

Wednesday, November 14, 9:00 a. m.

GENERAL SESSION

St. Anthony Hotel Tapestry Room

All women attending the Southern Medical Association meeting are invited to attend.

The President, Mrs. Southgate Leigh, presiding

Invocation—Mrs. S. A. Collom, Texarkana, Tex.

Greetings from Woman's Auxiliary to the Texas State Medical Association—Mrs. Preston Hunt, Texarkana, Tex.

Greetings from Woman's Auxiliary to Bexar County Medical Society—Mrs. Henry O. Wyneken, President, San Antonio.

Response to Welcome and Greetings—Mrs. Roger N. Herbert, President-Elect, Auxiliary to the American Medical Association, Nashville, Tenn.

Roll Call of States.

Memorial—Mrs. Frank N. Haggard, San Antonio.

Solo.

Report of Entertainment Committee—Mrs. Henry O. Wyneken, San Antonio, General Chairman.

Report of Credentials Committee—Mrs. Edward W. Coyle, San Antonio.

Reading of Minutes by the Recording Secretary—Mrs. Wm. Lett Harris, Norfolk, Va.

Order of Business:

- Report of President.
- Reports of Officers.
- Report of Organization Committee.
- Report of Publicity Committee.
- Report of Jane Todd Crawford Memorial Committee.
- Report of Committee on Revision of Constitution and By-Laws.
- Report of Custodian of Records.
- Report of Research Committee.
- Report of Resolutions Committee.
- Recommendations of Executive Board.
- State Reports.
- Unfinished Business.

Wednesday, November 14, 1:00 p. m.

Auxiliary Luncheon, St. Anthony Hotel Coconut Grove (Roof Garden). (Luncheon .75c per plate.)

Introduction of Honor Guests: Dr. Sam E. Thompson, President, Texas State Medical Association, Kerrville; Mrs. Preston Hunt, President, Woman's Auxiliary to the Texas State Medical Association, Texarkana.

Greetings from Southern Medical Association, Dr. Hugh Leslie Moore, President, Dallas, Tex.

Greetings from the Woman's Auxiliary to the American Medical Association, Mrs. Robt. W. Tomlinson, President, Wilmington, Del.

Address: Dr. Walter L. Bierring, President, American Medical Association, Des Moines, Iowa.

Address: "The Doctor's Wife in Mexico," Dr. Francisco de P. Miranda President, National Academy of Medicine of Mexico, Mexico City, Mexico.

Music.

Report of Nominating Committee.

Election of Officers.

Installation of President.

Introduction of New Officers.

Announcements by the new President, Mrs. J. Bonar White, Atlanta, Ga.

Adjournment.

Thursday, November 15, 10:00 a. m.

St. Anthony Hotel

Post Executive Board Meeting, Mrs. J. Bonar White, President, presiding

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Committee Chairmen for Women's Entertainment, San Antonio Meeting

General Chairman—Mrs. Henry O. Wyneken.
Program—Mrs. Frank N. Haggard.
Advisory Committee—Executive Board of the Woman's Auxiliary to the Bexar County Medical Society.
Publicity—Mrs. Merton M. Minter.
Registration—Mrs. Edward W. Coyle.
Information-Tickets—Mrs. W. H. Hargis.
President's Reception—Mrs. P. G. Bowen.
Decoration—Mrs. Raleigh L. Davis.
Courtesy—Mrs. Lee Rice.
Executive Board Luncheon—Mrs. Frank Paschal.
Golf—Mrs. I. T. Cutter.
Tea—Mrs. E. V. DePew.
Auxiliary Luncheon—Mrs. W. E. Nesbit.
Historical Drive—Mrs. T. A. Pressley.
Governor's Palace Tea—Mrs. W. M. Barron.

Officers, Woman's Auxiliary to the Bexar County Medical Society, San Antonio

President—Mrs. Henry O. Wyneken.
First Vice-President—Mrs. E. Meredith Sykes.
Second Vice-President—Mrs. O. H. Timmins.
Third Vice-President—Mrs. Raleigh L. Davis.
Fourth Vice-President—Mrs. Carl Bosshardt.
Recording Secretary—Mrs. J. K. Donaldson.
Corresponding Secretary—Mrs. F. H. Rosebrough.
Treasurer—Mrs. J. L. Pipkin.
Publicity Chairman—Mrs. Herbert Hill.
Auditor—Mrs. J. R. Nicholson.
Historian—Mrs. J. H. Biggar.
Parliamentarian—Mrs. W. J. Johnson.

Officers, Woman's Auxiliary to the Texas State Medical Association

President—Mrs. Preston Hunt, Texarkana.
Honorary Life President—Mrs. A. C. Scott, Temple.
President-Elect—Mrs. John T. Moore, Houston.
First Vice-President—Mrs. S. D. Whitten, Greenville.
Second Vice-President—Mrs. R. B. Homan, El Paso.
Third Vice-President—Mrs. J. H. Marshall, Dallas.
Fourth Vice-President—Mrs. E. H. Marek, Yoakum.
Recording Secretary—Mrs. H. O. Wyneken, San Antonio.
Corresponding Secretary—Mrs. J. T. Robison, Texarkana.
Treasurer—Mrs. S. F. Harrington, Dallas.
Parliamentarian—Mrs. J. H. Barham, Nacogdoches.
Publicity Secretary—Mrs. A. B. Pumphrey, Fort Worth.

GOLF

The Willow Springs Golf Club, the Brackenridge Park Golf Club (public), and the Riverside Golf Club (public), extend privileges to the members of the Southern Medical Association and other visiting physicians attending the San Antonio meeting and their ladies. Each golfer should wear the official badge when visiting the golf clubs. There will be no grounds fee at the Willow Springs Club, .50c at the Brackenridge Park and the Riverside Clubs.

The golf tournament for men will be held at the Willow Springs Golf Club, Tuesday, Wednesday and Thursday, November 13-15. Play may be made at any time during any of these three days, the golfer turning in his score to the professional, Mr. Morgan, not later than 6:00 p. m. Thursday. Any golfer not satisfied with one eighteen-hole score may play and turn in as many full eighteen-hole scores as he desires, the best one being counted in the distribution of prizes.

In addition to the *Washington Post* Cup, in play since 1923, the major trophy in the tournament without handicap, and the *Dallas Morning News* Cup, in play since 1925, the major trophy in the handicap tournament, both to be played for each year until won three times in succession by the same golfer, there will be a prize for low medal score, one for the runner-up (medal score), one for high gross or "booby," and one for men over fifty years of age (low medal score). All who enter the handicap tournament must present to the starter their club handicap certified to by their local secretary or professional.

The golf tournament for ladies will be held at the Willow Springs Golf Club, Thursday, November 15, 9:00 a. m. to 12:00 noon.

In addition to the *Memphis Commercial-Appeal* trophy, in play since 1927, to be played for each year until won three times in succession by the same lady golfer, there will be a trophy for low medal score and one for the runner-up (medal score).

It is requested that all who wish to play golf at any time during the meeting register at the Information Window at the Registration Headquarters in the Ballroom on the Mezzanine Floor of the Gunter Hotel.

Arrangements have been made with the Yellow Cab Company to transport one or up to five to the Willow Springs Golf Club for .50c; return trip will be the same price.

Dr. George Paschal, 411 Maverick Street, San Antonio, is Chairman of the Golf Committee, and has associated with him Dr. C. E. Bosshardt, Dr. M. A. Ramsdell and Dr. B. H. Reinarz. Mrs. I. T. Cutter, 232 West Lullwood Street, San Antonio, is Co-Chairman for the ladies.

TRAP SHOOTING TOURNAMENT

The ninth annual Trap Shooting Tournament of the Southern Medical Association will be held at the San Antonio Gun Club, San Antonio, Texas, under the auspices of the Bexar County Medical Society, Thursday, November 15, at 1:00 p. m. Cars

to convey the shooters to the Club will leave the Gunter Hotel promptly at 12:30 p. m.

The program will consist of 100-16 yard targets, Class A, B and C; 25 handicap; 12 pairs of doubles; and 50 skeet—the skeet is optional.

The major trophy, a leg on the *Atlanta Journal* Bowl, to be shot for each year until won three times in succession by the same shooter, and which has been competed for since 1926, will be competed for again this year, the leg to go to the high man on 100-16 yard targets.

Another major trophy, in shoot for the third time this year, is the Bausch and Lomb Microscope complete, donated by McKesson-Doster-Northington, Incorporated, Birmingham, to be won three times by the same shooter, twice in succession, for high over all (100-16 yard, handicap and doubles), not including skeet.

There will be a trophy for the winner and runner-up in each class A, B and C, also in the handicap, doubles and the skeet. All shooters will be eligible to all events.

Rules Governing Shoot

1. With the exception of the method used in classifying shooters, A.T.A. and N.S.A. rules will govern.

2. Shooters will classify themselves in three classes—A, B and C. No attempt will be made at classification prior to the shoot, but each shooter will classify himself on the score he makes. The number of positions shot will be divided by three and the high one-third will constitute Class A, the second one-third will constitute Class B, and the remaining one-third Class C. Any fraction in the division will either be added to or deducted from Class A.

3. Shooting will start promptly at 1:00 p. m., and it is essential that every one be on time; otherwise the program cannot be finished before dark. A referee will call dead or lost targets after each shot; he will interpret all rules; his decision will be final.

4. All ties will be shot off on twenty-five targets.

Shooters who plan to enter the handicap event are requested to send their authenticated handicap to the Chairman at least one week in advance of the shoot.

The Committee requests shooters to bring their own guns. Shells of all popular makes will be on sale on the club grounds.

Dr. R. S. Adams, 526 East Park Avenue, San Antonio, is Chairman of the Trap Shooting Committee and will be glad to be of service in any way he can to visiting shooters.

RAILROAD RATES

Special reduced round trip rates have been granted on all railroads on the Identification Certificate Plan. Certificates have been mailed to all members of the Southern Medical Association. Any member who has not received a certificate should write the Association office. *An identification certificate issued from the Southern Medical Association office in Birmingham, Alabama, in advance of the meeting is absolutely necessary to secure reduced railroad rates.* Physicians who are not members of the Southern Medical Association but are members of their state and county medical societies and wish to attend the meeting, should ask the Southern Medical Association office, Empire Building, Birmingham, Alabama, for a certificate.

The special rate is one and one-third fare for the round trip, going and returning the same way, or going one way and returning another. The dates of sale are November 10 to 16, with a final limit of thirty days.

SAN ANTONIO HOTELS

San Antonio has good hotels, and those who plan to attend the meeting can be assured of comfortable hotel accommodations. If one writes to the hotel of his choice and does not hear within a reasonable time, or if any hotel has reservations up to its capacity, the local Hotel Committee, of which Dr. H. O. Wyneken, Medical Arts Building, San Antonio, is Chairman, will be glad to see that comfortable accommodations are secured for any physician who may write. Dr. Wyneken and his Committee will take pleasure in being of service in any way they can to physicians contemplating attending the San Antonio meeting. In writing the hotel, or Dr. Wyneken, state the kind and price of accommodations desired, the day reservation is to become effective, and if possible give time of day reservation is to begin.

GUNTER HOTEL (General Headquarters)
Single, with bath, $2.00 to $6.00
Double (double bed), with bath, $3.00 to $7.00
Double (twin beds), with bath, $4.00 to $7.00

PLAZA HOTEL
Single, with bath, $2.00 to $5.00
Double (double bed), with bath, $3.00 to $6.00
Double (twin beds), with bath, $4.00 to $7.00

ST. ANTHONY HOTEL
Single, with bath, $2.00 to $6.00
Double (double bed), with bath, $3.00 to $5.00
Double (twin beds), with bath, $3.50 to $15.00

BLUE BONNET HOTEL
Single, with bath, $2.00 to $3.00
Double, with bath, $3.00 to $4.00
Suites (twin beds), $5.00 to $6.00

ROBERT E. LEE HOTEL
Single, with bath, $2.00 to $2.50
Double, with bath, $3.00 to $3.50

LANIER HOTEL
Single, with bath, $1.50 to $2.50
Double (double bed), with bath, $3.00 to $3.50
Double (twin beds), with bath, $3.00 to $4.00
Single, without bath, $1.00 to $1.50
Double, without bath, $2.00 to $3.00

MENGER HOTEL
Single, without bath, $1.50
Double, without bath, $2.50
Single, with bath, $2.00 to $3.00
Double, with bath, $3.00 to $6.00

TECHNICAL EXHIBITS

Gunter Hotel

The Technical Exhibits, always a feature of the annual meeting, will be up to the usual high standard for this meeting. There will be uniform booths and the whole layout will be found very attractive and acceptable. The Technical Exhibits are entertaining and educational. Each physician attending the meeting should spend some time with these exhibits—much is to be learned there. The physicians will find the exhibitors courteous and anxious to answer any questions that may be asked.

Here follow the names of the firms who have exhibits with their space number:

	Space
Abbott Laboratories, North Chicago, Ills.	33
American Optical Company, Southbridge, Mass., and San Antonio, Tex.	50–51
Bard, C. R., Inc., New York, N. Y.	34
Bard-Parker Company, Inc., Danbury, Conn.	14
Bausch and Lomb Optical Company, Rochester, N. Y.	39
Bilhuber-Knoll Corporation, Jersey City, N. J.	2
Davies, Rose and Company, Ltd., Boston, Mass.	52
DePuy Manufacturing Company, Warsaw, Ind.	49
Dry Milk Co., The, New York, N. Y.	22–23
Eastman Kodak Company, Rochester, N. Y.	30
Emmerich-Schmid, Inc., Indianapolis, Ind.	5
Enochs Manufacturing Company, Indianapolis, Ind.	5
Fischer and Co., H. G., Inc., Chicago, Ills.	4
Foregger Company, The, New York, N. Y.	44
Fougera and Company, E., New York, N. Y.	10
General Electric X-Ray Corporation, Chicago, Ills.	45–46
Gerber Products Company, Fremont, Mich.	15
Health Products Corporation, Newark, N. J.	3
Heidbrink Company, The, Minneapolis, Minn.	32
Horlick's Malted Milk Corporation, Racine, Wis.	19
Hynson, Westcott and Dunning, Baltimore, Md.	21
Irradiated Evaporated Milk Institute, Chicago, Ills.	47–48
Kelley-Koett Manufacturing Company, Covington, Ky.	24–25
Larsen Company, The, Milwaukee, Wis.	8
Lippincott Company, J. B., Philadelphia, Penn.	11
Majors Company, J. A., New Orleans, La., and Dallas, Tex.	54
Mead Johnson and Company, Evansville, Ind.	35–36
Medical Bureau, The, Chicago, Ills.	9
Mellin's Food Company, Boston, Mass.	41–42
Metz Laboratories, H. A., Inc., New York, N. Y.	38
Middlewest Instrument Company, Chicago, Ills.	1
Mosby Company, The C. V., St. Louis, Mo.	20

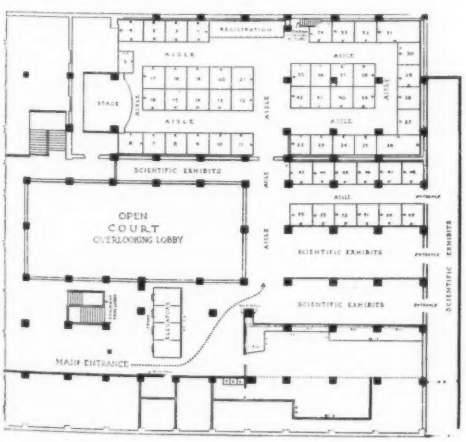
OFFICERS, BEXAR COUNTY MEDICAL SOCIETY, SAN ANTONIO

President, Dr. W. S. Hamilton.
Vice-President—Dr. J. A. Watts.
Secretary, Dr. H. O. Wyneken.
Treasurer, Dr. H. McC. Johnson.
Immediate Past-President, Dr. Roy T. Goodwin.

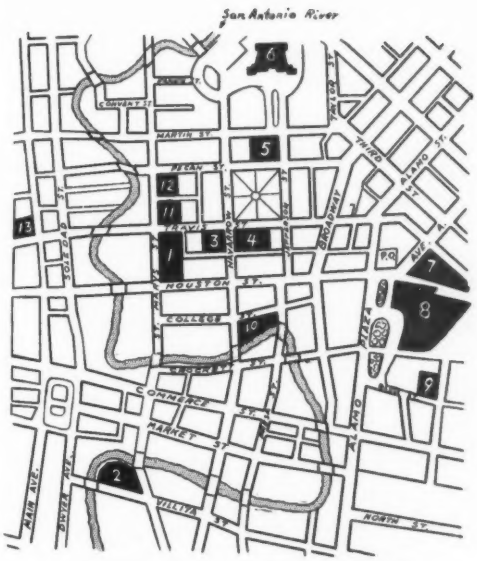
CHAIRMEN OF COMMITTEES ON ARRANGEMENTS FOR THE BEXAR COUNTY MEDICAL SOCIETY, SAN ANTONIO

General Chairman, Dr. J. Manning Venable.
Vice-General Chairman, Dr. Roy T. Goodwin.
Honorary Vice-General Chairmen, Dr. W. B. Russ, Dr. John H. Burleson, Dr. Evarts V. DePew, Dr. B. F. Stout, Dr. Lee Rice, Dr. Wm. D. Gill, and Dr. Sam E. Thompson (Kerrville).
Finance, Dr. Charles S. Venable.
Entertainment, Dr. Sidney R. Kaliski.
Hotels and Meeting Places, Dr. H. O. Wyneken.
Publicity, Dr. P. I. Nixon.
Exhibits, Dr. Frederick Fink.
Alumni Reunions and Fraternity Luncheons, Dr. Herbert Hill.
Membership, Dr. John H. Burleson.
Program or Clinics, Dr. Wm. D. Gill.
Information, Dr. L. L. Lee.
Transportation, Dr. W. H. Heck.
Lanterns, Dr. H. McC. Johnson.
Golf, Dr. George Paschal.
Trap Shooting, Dr. R. S. Adams.
Women Physicians, Dr. Minnie C. O'Brien.
Ladies' Entertainment, Mrs. H. O. Wyneken, President, Woman's Auxiliary to Bexar County Medical Society.

M and R Dietetic Laboratories, Inc., Columbus, Ohio	12–13
Nestle's Milk Products, Inc., New York, N. Y.	28
Petrolagar Laboratories, Inc., Chicago, Ills.	16
Philips Metalix Corporation, New York, N. Y.	17–18
Prior Company, W. F., Inc., Hagerstown, Md.	37
Riggs Optical Company, Dallas and San Antonio, Tex.	40
Sanborn Company, Cambridge, Mass.	29
Spencer Lens Company, Buffalo, N. Y.	53
Squibb and Sons, E. R., New York, N. Y.	43
Storz Instrument Company, St. Louis, Mo.	27
Westinghouse X-Ray Company, Inc., Long Island City, N. Y.	6– 7
Winthrop Chemical Company, New York, N. Y.	38
Winthrop Chemical Company, New York, N. Y. (Moving Picture Exhibit—Scientific Films)	31



Mezzanine Floor, Gunter Hotel



STREET MAP OF SAN ANTONIO

1. **Gunter Hotel.**
2. **Plaza Hotel.**
3. **Travis Park Methodist Church and Annex.**
4. **St. Anthony Hotel.**
5. **St. Marks Episcopal Church Parish House.**
6. **Municipal Auditorium.**
7. Medical Arts Building.
8. The Alamo.
9. Menger Hotel.
10. Nix Professional Building.
11. Lanier Hotel.
12. Blue Bonnet Hotel.
13. Robert E. Lee Hotel.

Southern Medical Journal

JOURNAL OF THE

SOUTHERN MEDICAL ASSOCIATION

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M. Y. DABNEY, M.D., Editor
EUGENIA B. DABNEY, M.S., Assistant Editor
C. P. LORANZ, Secretary-Manager

Vol. 27 NOVEMBER 1934 No. 11

EDITORIAL DEPARTMENT

SOUTHERN MEDICAL ASSOCIATION
Twenty-Eighth Annual Meeting
San Antonio, Texas, November 13-16, 1934

THE SAN ANTONIO MEETING

The program of the San Antonio meeting, beginning on page 954, describes its details. The four days will be replete with clinical lectures by men who have distinguished themselves in a particular field. The technical and scientific exhibits, which have never offered a more excellent or varied display, will satisfy the scientist's natural desire to see and touch new instruments, drugs, pathological material, and one might almost say, new ideas. These, with the motion pictures, illustrating surgical technic, should be worthy of four days' study in themselves.

On Monday and Tuesday, meetings of several regional societies will take place, some of which will continue Wednesday. On Tuesday, general clinics will be held, medical, surgical, and obstetrical and gynecologic. The President's, Dr. Moore's, address, "The Foundation of Longevity," will be presented at the first general evening session on Tuesday.

On Wednesday, a general clinical session arranged by Dr. Moore will present a group of distinguished specialists from different parts of America, and from England, France and Mexico. Their subjects will be of interest to men in other specialties, and to those in general practice. At a round table luncheon on Wednesday, state medicine will be discussed from several standpoints.

The regular section meetings will convene in part on Wednesday, and continuously on Thursday and Friday. There will be a number of section and special group luncheons and banquets.

The subjects for discussion in the scientific meetings will be exceedingly varied: the ethmoid, mastoid, sinus, bronchoscopy in pulmonary diseases, suspension laryngoscopy, new drugs in malaria, asthma and allergy may be noted recurring in the titles of essays. Before the American Academy of Pediatrics, there will be a symposium upon the tonsil, and another upon infectious diarrhea. A number of papers will deal with food deficiency diseases, and there will be a symposium on deficiency diseases in the Section on Medicine. On the program are to be noted a number of papers on endocrine disorders and the use of the new endocrine preparations. The interpretation of abdominal pain, surgical relief of pain about the head and face, surgical care of patients in the extremes of life, bone tumors, thick split skin grafts, phases of hyper- and hypothyroidism, physical therapy in skin diseases, conduct of labor, urography, transurethral resections in bladder neck obstruction, prevention of whooping cough, prevention of diphtheria, vaccination against yellow fever; breast tumors and radiation treatment of carcinoma of the breast, are among the many subjects which arrest one's attention in glancing through the completed lists. Section clinics will be conducted by well qualified men. A number of outstanding Mexican physicians and surgeons will take part in the program.

The opportunity of a visit to the hospitable, progressive, and historic city of the great Southwest should not be missed. The Mexican trip to follow is an added inducement which will tempt many Association members and their guests.

ATABRINE, PLASMOCHIN, AND QUININE

Malaria is a subject believed by the laity to be medically exhausted; yet there is probably no disease which during the last quarter of a century has employed a greater number of more gifted investigators. Its specific treatment, far from being settled for posterity with the establishment of a standard quinine dosage, is undergoing constant change and improvement. Sanitary measures for its control are prodigious

and unending throughout the world. They are among the most distinguished of Mussolini's public works. They of course continuously occupy health departments in the southern United States and in all warm countries.

The Malaria Commission of the League of Nations[1] has issued its third general report upon the therapeutics of malaria. Its evaluation of the new synthetic antimalarial agents, plasmochin and atabrine, is probably as nearly authoritative as any treatise upon the subject may be.

In prevention of the development of the disease after exposure to infection, says the Commission, plasmochin was effective against *P. vivax* and *P. falciparum* if taken in very large dosage. It prevented the disease in persons who could take 0.08 grams per day for eight days after exposure. In this quantity it was quite toxic. In the usual therapeutic dosage (0.3 grams daily for five to eight days) it was ineffective as a prophylactic, though it delayed the onset of symptoms. Atabrine in therapeutic dosage likewise delayed the onset of symptoms, sometimes for eight months, but did not prevent infection. It has the disadvantage of temporarily coloring the patient yellow. Atabrine in large doses is less toxic than plasmochin, and it was considered that preference should be given to atabrine over plasmochin in prophylaxis. However, no known drug, when taken in harmless doses during the period of infection, will effectively destroy the causal organisms of malaria. For clinical prophylaxis quinine in a daily dose of 0.4 grams is the most effective drug.

In treatment of the clinical attack, says the Commission, plasmochin and atabrine must now be classed as specific antimalarial remedies: not as substitutes for quinine, but as additional weapons for special purposes. Each has its own particular action on the malarial parasite. The cure of the attack and the prevention of relapse are distinct tasks, to be separately undertaken. It is incorrect to attempt to accomplish both of them at the same time. It is not good practice to treat acute malaria with a combination of plasmochin and quinine. For primary attacks of malignant tertian fever caused by *P. falciparum*, atabrine is very much more effective than quinine or any other remedy hitherto known. Good results can, however, be obtained with quinine. For benign tertian, atabrine and quinine in the usually recommended doses seem to be equally efficacious. The same is true of quartan malaria. In primary attacks of malaria, two specific remedies instead of only one are now available. This is of particular significance in cases which may be resistant to one or the other drug.

No drug is yet available which will prevent the possibility of relapses. Early reports to the effect that atabrine was completely effective in preventing relapses have not been confirmed. Like plasmochin and quinine, it is not capable of bringing about complete sterilization of the malaria parasite in the human host. Atabrine has a more powerful action in malignant tertian fever than any other remedy known, but it is by no means always successful even in that type of malaria. In benign tertian, it is a little less effective than quinine. For prevention of relapses, the defensive power of the patient is as important as specific medication.

In control of the spread of the disease, it must be recalled that only sexual forms of the plasmodium are capable of reproducing in the mosquito. Unlike contagious diseases such as measles and mumps, and poliomyelitis, which are most infectious before they are definitely diagnosed, malaria is not infectious in the early stages. Children are more liable to carry gametocytes than are adults, and are therefore more important in dissemination of the disease. Plasmochin is believed to have a direct action on the crescents of malignant tertian malaria after they have appeared in the peripheral blood. This is in contrast to atabrine and quinine, which have no effect on the developed crescents; they may prevent their formation. Plasmochin is suitable as a gametocide in malignant tertian malaria and, in the opinion of the Commission, this is the purpose for which at present its use should be confined. It is too toxic to be generally administered.

The report is somewhat more conservative in its evaluation of atabrine than many other discussions have been. It is of interest particularly in view of the extensive clinical trials now in progress with this drug. It is to be noted that treatment is recommended only during the acute attack of malaria, that is, medication for five to seven days. This is in contrast to the old standard treatment which required 30 grains of quinine a day for five days, to be followed by 10 grains a day for six weeks.

1. The Therapeutics of Malaria. Third General Report of the Malaria Commission. Quarterly Bulletin of the Health Organization of the League of Nations, Vol. 11, Extract No. 5 (1).

GLEANINGS FROM RECENT JOURNALS

Vitamin Dosage.—The questions of how much vitamin an individual requires, and of how frequent the dosage should be, are difficult to determine. It is usually believed that vitamins to be efficacious must be taken daily, not at prolonged intervals.

The standardization of these accessory food factors which are derived from natural sources is a troublesome procedure. The laborious part of the work is the giving of vitamin to a number of animals each day during the experimental period. To lessen this part of the labor, Coward and Kay[1] compared the effect of daily and of half weekly doses, and of giving the entire ten-day quantity of vitamin in a single feeding. The results were satisfactory with vitamins A and D, recovery with a single massive dose of vitamin being about the same as when the same quantity was administered in divided daily feedings.

Sherman and Todhunter[2] have reported somewhat similar results in testing different sources of carotene, the precursor of vitamin A. Employing, as usual, rats which had ceased to grow on an A-deficient diet, they gave a large quantity of a source of vitamin A in a single feeding. The resulting increase in the growth rate was proportional to the quantity of vitamin A administered from the different sources. Incidentally, they found fresh kale to be one of the best sources of vitamin A. The English and the New York workers, investigating independently, thus confirm one another that vitamin A is as effective, within limits, when given in a single dose as in smaller daily doses.

From both a laboratory and a commercial point of view, these results are of considerable interest. Great quantities of vitamins are now being sold and must be standardized before they are put on the market, and a reduction of the labor of standardization is much needed. The results are also of clinical significance, since it has been believed that vitamins, to be effective in children's dietaries, must be consumed daily over a long period. If children could be given fortnightly doses instead, much labor of parents and pediatricians would be spared. The clinical efficacy of massive dosage followed by rest periods is of course not established by the animal experiments. Practically all the present day knowledge of vitamins is derived from analogy of animal and human reactions, and these studies reopen the question of the most effective clinical method of dosage.

Vitamin A in Cow's and Goat's Milk.—In ordinary butter, as in many vegetables, vitamin A is present as the precursor, carotene, a yellow pigment. The pigment and the vitamin may be increased simultaneously by increasing the allowance of grass to the individual cow. Butter from goat's milk, on the contrary, is almost colorless, though it may be rich in vitamin A. In goat's milk the vitamin exists in the preformed, and colorless state, not as the pigment carotene.[1]

Vitamins and Heart Block.—"Heart block is the condition in which the muscular interconnection between the auricle and ventricle (auriculoventricular band or band of His) is interrupted, so that the auricle and ventricle beat independently of each other."[1] Carter[2] reports heart block in pigeons which have been kept on a diet of polished rice. The condition was not improved, he says, by adding vitamins B, G, or the fat-soluble vitamins to the diet; but the addition of 60 per cent of whole wheat, or of hydrolyzed wheat germ, cleared up the cardiac irregularity sometimes in three to five days, and brought about complete restoration of function.

Dietary measures are not to be forgotten in treatment of human heart diseases, though these, of course, must usually be of slower development and of much more intricate causation.

Vegetables Also Require Vitamins.—A necessary factor for the growth of legumes is an enzyme obtainable from yeast, from cane molasses and from commercial egg albumen. Commercial sucrose contains a small percentage.[3]

---

1. Coward, K. H.; and Kay, K. M.: Relation of Growth Response to Dosage of Vitamin A. Biochem. Jour., **28**:865, 1934.

2. Sherman, H. C.; and Todhunter, E. N.: Determination of Vitamin A Values by a Method of Single Feedings. Jour. Nutrition, **8**:347, Sept., 1934.

1. Gillam, A. E.; and Heilbron, I. M.: Relation of Color and Vitamin A Content of Butter to the Nature of the Ration Fed. Watson, S. J.: Relation of Color and Vitamin A Content of Butter to Nature of Ration Fed. Gillam, A. E.; and Heilbron, I. M.: Carotinoid and Vitamin A Content of Butter. Biochem. Jour., **28**:1076, 1934.

2. Carter, C. W.: Maintenance Nutrition in the Pigeon and Its Relation to Heart Block. Biochem. Jour., **28**:933, 1934.

3. Allison, F. E.; and Hoover, S. R.: An Accessory Factor for Legume Nodule Bacteria: Sources and Activity. Jour. Bacteriol., **27**:561, June, 1934.

TWENTY-FIVE YEARS AGO

FROM JOURNALS OF 1909

A Million Dollars for Hookworm Eradication in the South.[1]—"The *Journal* congratulates Dr. Stiles, John D. Rockefeller and the South upon the crusade against the hookworm. * * * We feel that the South will owe Rockefeller a great debt of gratitude for his gift, but we feel that humanity and our particular section also owes a great debt to the man of science, Dr. Charles Wardell Stiles, whose great brain is responsible for discovering Uncinaria americana, and to whose indefatigable energy the importance of hookworm anemia has been forced upon the people."

Syphilis and Cardiovascular Disease.[2]—"From a study of 36 cases of cardiac and vascular disease the importance of syphilis as a causative factor is established in a very large percentage of all the cases. * * * the highest percentage was obtained in cases of aneurysm, in which a positive Wassermann reaction was obtained in all of five cases. * * * In marked contrast to this are the cases of diffuse chronic endocarditis affecting the mitral valve, in which only 1 of the 7 cases gave a positive reaction. * * * Our best results have been obtained by the use of deep sublimate injections."

Tonsils.[3]—It has been observed for years that tonsillar hypertrophy is not simply a local disease, but that the hypertrophy accompanies a diathetic taint or a condition of malnutrition. * * * the different forms of hypertrophy may be regarded as indicating different forms of overstimulation. The hyperplastic form would indicate excessive elimination of some irritating substance from the general circulation, probably brought to the tonsil by the blood, and the true hypertrophic form would indicate local elimination, probably directly from the lymph space surrounding the tonsils, as in the case of near-by tuberculous disease. * * * The obscure relation between rheumatism and follicular tonsillitis will find its explanation in this hypothesis, rather than in the old belief that the rheumatism might enter through the tonsil. Some light ought to be thrown on the causes of appendicitis by this probable function of the adenoid structure in the appendix.

Vaccines in Endocarditis.[1]—"Following the method of Sir Almoth Wright of the injection of homologous or autothoctonous vaccines, I have treated a series of cases of septic (streptococcal) endocarditis and pyemia with results which have again demonstrated its effectiveness, * * * three cases of septic endocarditis were cured, with one of serious pyemia, and in several other cases of septic endocarditis there was clinical evidence that the septic process had been completely controlled, although subsequently death ensued from such complications as tuberculosis or pneumonia, which as yet are beyond the influence of vaccine treatment."

Cesarean Section in Eclampsia.[2]—"* * * The expectant plan of treatment in true eclampsia should be entirely abandoned, and this condition should be met in the first place by the rapid emptying of the uterus. * * * As far back as September, 1896, the International Congress at Geneva decided that according to the best authorities the uterus should be emptied as quickly as possible after the onset of eclampsia. * * * The time was * * * when no one dared to extract the child of a woman in good condition by abdominal section. * * * Today, however, cesarean section is * * * being performed more and more by the best obstetricians and gynecologists in the treatment of eclampsia, and I propose to show why high forceps is gradually giving way to cesarean section."

1. Editorial. Dr. Stiles' and John D. Rockefeller's Million Dollar Hookworm Crusade. Gulf States Journal of Medicine and Surgery, **14**:730, 1909.

2. Collins, Joseph; and Sachs, B.: The Value of the Wassermann Reaction in Cardiac and Vascular Disease. Amer. Jour. Med. Sci., **138**:350, 1909.

3. Ashurst, W. W.: The Tonsils as Eliminative Organs. Amer. Jour. Med. Sci., **138**:112, 1909.

1. Thompson, W. Gilman: Clinical Experiments with Homologous Vaccines in the Treatment of Septic Endocarditis and Pyemia. Amer. Jour. Med. Sci., **138**:169, 1909.

2. Maguire, Daniel L.: The Treatment of Puerperal Eclampsia by Cesarian Section. Sou. Med. Jour., **2**:1076, 1909.

Book Reviews

Practical Talks on Heart Disease. By George L. Carlisle, M.D., Associate Professor of Clinical Medicine, Baylor University, Dallas, Texas. 153 pages. Springfield, Illinois: Charles C. Thomas, 1934. Cloth, $2.00.

This little volume consists of a series of short chapters on the more important clinical aspects of cardiac disease. The book is written for the physician who must base his diagnoses and treatment on the clinical findings alone. There is no discussion of electrocardiography, cardiovascular roentgenology or other procedures requiring expensive apparatus, the author rightfully believing that in the great majority of patients such methods are unnecessary. No attempt is made to consider the fundamental, pathological physiology of the circulation. The author's discussions are brief and clear. He has

succeeded in crystallizing into the least possible space the most important factors of the common disorders of the heart. It is an excellent book and serves well its intended purpose of describing for the practitioner the most important clinical features of heart disease.

Atlas Fundus Oculi. By William Holland Wilmer, M.D. (University of Virginia), LL.D. (Georgetown University), Sc.D. (Princeton University and New York University); Professor of Ophthalmology and Director of the Department of Ophthalmology of the Johns Hopkins University School of Medicine; Ophthalmologist-in-Chief to the Johns Hopkins Hospital; Consultant to Episcopal Eye, Ear and Throat Hospital, Washington, D. C.; Brigadier General, U. S. Army, Aux. Res. Introduction by Warfield T. Longcope, M.D., Professor of Medicine and Director of the Department of Medicine of the Johns Hopkins School of Medicine. 100 color plates. New York: The Macmillan Company, 1934. Cloth, $35.00.

This is a book every page of which will be read.

The timely introduction by a distinguished internist is a reminder that ophthalmoscopy should become a part of every complete physical survey. It should not be shunted to the office of the eye specialist. Dr. Longcope says that nowhere else can vessel changes be so completely studied and demonstrated as in the eye ground and nowhere else can one so visualize the vascular danger from syphilis, tuberculosis, diabetes, arteriosclerosis, thrombosis or the anemias as in the fundus of the eye.

If the use of the ophthalmoscope were taught as thoroughly as is the stethoscope the average physician would practice medicine with far more confidence and pleasure.

Dr. Wilmer has selected one hundred cases for illustrations with care and wisdom. He gives eight pictures of the normal human eye, all different. They are chosen to show variations in pigment and include fundi of negroes, mulattoes, Chinese, Hindus (blonde and brunette), even the Albino.

Five illustrations represent the fundi of animals, six of congenital anomalies. The legends vividly describe the significant points to be seen in each illustration.

The eighty-one pictures of pathologic lesions are especially well chosen. One can mention only a few: those of hereditary optic nerve atrophy (Leber's disease) are excellent samples.

The unusual number of illustrations showing lesions of tuberculous choroidoretinitis is evidence of the increasing recognition of this disease as a cause of "idiopathic" eye lesions.

Plate 33 is unique. One thinks it typical of albuminuric retinitis and is surprised to note that the blood pressure and urine are normal. The rapid improvement with return of perfect vision following the removal of the infected tonsils, adenoids and one abscessed tooth is a striking contradiction of the German contention that focal infection has no place in the etiology of eye disease. Plates 39, 40 and 41 illustrate three different stages of a case of central choroidoretinitis of tuberculous origin in a woman first seen at age 23, made at intervals of one to four years. The legends give full details of the clinical history. One is reminded of cases reported by Jonathan Hutchinson, the great teacher who followed his cases through several decades and reported every significant fact.

One can hardly praise the book too highly.

Spinal Anesthesia. Technic and Clinical Application. By George Rudolph Vehrs, M.D., Salem, Oregon. 269 pages, illustrated. St. Louis: The C. V. Mosby Company, 1934. Cloth, $5.50.

In his book Dr. Vehrs surveys the history of spinal anesthesia for the past forty-nine years. He discusses the drugs that have been used, the anatomy and physiology of the spinal cord and brain, and the methods of administering the anesthetic. In total anesthesia he prefers to use neocaine; otherwise novocaine is his choice. This type of anesthesia, he says, should be given by a man who has received extensive training. Local anesthesia should be used whenever possible, but for the deep-seated organs spinal anesthesia offers the easiest and best method of approach. If it is given by skilled men and to cases adapted to this type of anesthetic, he claims that it is the safest of anesthetics. This book gives a satisfactory explanation of the factors involved, the methods of administration and the results that are to be expected from the use of spinal anesthesia.

A Text-book of Gynecology. By Arthur Hale Curtis, M.D., Professor and Head of the Department of Obstetrics and Gynecology, Northwestern University Medical School; Chief of Staff and Chief of the Gynecological Service, Passavant Memorial Hospital, Chicago. 493 pages, illustrated. Philadelphia: W. B. Saunders Company, 1934. Cloth, $6.00.

This second edition records all the important advances in gynecology since the advent of the original book. The value of the text lies in the presentation of the subject matter without a great deal of frills and furbelows. There are a number of additional illustrations and in places the text has been given fuller wording in order to give the student a broader knowledge of the subject. This book is well adapted to the needs of the student and general surgeon.

A Text-book of Pathology. Edited by E. T. Bell, M.D., Professor of Pathology, University of Minnesota, Minneapolis, Minnesota. Second edition, thoroughly revised and considerably enlarged, illustrated with 364 engravings and 2 color plates. 767 pages. Philadelphia: Lea & Febiger, 1934. Cloth, $8.50.

Dr. Bell and his contributors have brought this book abreast of the current medical literature, and have added a chapter on the diseases of the bones and joints. The text has been expanded to give fuller discussions and many new references are added. All the references are labeled as to subject matter in order to conserve the time of the reader. The book is still of sufficient brevity, but has lost the terseness of the previous edition, an improvement.

The Power to Love. By Edwin W. Hirsch, B.S., M.D., Associate in Urology, College of Medicine, University of Illinois. 363 pages. New York: Alfred A. Knopf, publisher, 1934. Cloth, $4.00.

The verbiage is non-scientific and the layman will understand it. The normal physiology of the sexual act is explained in relation to the psychic problems that may be involved. Other topics are sexual debility, frigidity, impotence and their treatment.

BOOK REVIEWS continued on page 28

LATENT AVITAMINOSIS
called BORDERLINE STATES
of ILL HEALTH

TABLETS
YEAST VITAMINE-B

AUTHORITIES AGREE that borderline cases of Vitamine-B deficiency as it exists in the United States are very difficult to diagnose.

DR. L. B. MENDEL (Jr. A.M.A., July 9, 1932) refers often to ". . . the fact that chronic vitamine deficiency produces numerous vague, borderline states of ill health which often puzzle the physician and disable the patient."

IT HAS OFTEN been shown that dietary restrictions instituted to combat some one disease may in itself give rise to symptoms of some other disease, such as the report by Dr. Russell M. Wilder (Jr. A.M.A., Nov. 14, '31) of cases of pellagra that occurred in a patient under dietary treatment for epilepsy where ". . . in both cases the addition of brewers' yeast alone, without other alteration of the diet, promptly resulted in a cure."

DR. GEO. R. COWGILL (Jr. A.M.A., June 25, 1932) says that in cases of doubt with respect to shortage of **vitamine-B** playing a role, the test is to **administer large amounts of the missing factor immediately.** "It has been shown that many marasmic babies have their interest in food and urge to eat restored by the administration of vitamine-B."

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Continued from page 982

A Text-book of Histology. By Alexander A. Maximow, Late Professor of Anatomy, University of Chicago; and William Bloom, Associate Professor of Anatomy, University of Chicago. Second edition, completely revised. 662 pages, illustrated. Philadelphia: W. B. Saunders Company, 1934. Cloth, $7.00.

This edition has been redesigned and rewritten to meet the needs of the beginning medical student. Details and controversial points have been placed in small type. The more significant recent findings have been brought out. At the end of each chapter is a list of references to papers with more extensive bibliographies; this makes it easy for the reader to look up the facts and opinions in a single case. Forty-nine new illustrations bring the total to five hundred and thirty. For the most part these illustrations are photographs of tissue and cells and they add greatly to the attractiveness and usefulness of the book.

Southern Medical News

The Jefferson Medical College, Philadelphia, Pennsylvania, inaugurated its one hundred and tenth annual session on Monday evening, September 24.

ALABAMA

Dr. James S. McLester, Birmingham, Professor of Medicine at the University of Alabama, and President-Elect of the American Medical Association, delivered the annual Gorgas address before the LaFayette Guild Chapter of the Gorgas Medical Society at the University in October in commemoration of the eightieth birthday of the late Dr. William Crawford Gorgas.

The Northeastern Division of the State Association met in Huntsville recently with Dr. W. M. Salter, Vice-President, Anniston, presiding.

Dr. H. Earle Conwell, Employees' Hospital, Fairfield, Birmingham, recently conducted a fracture clinic at the Duke University School of Medicine, Durham, North Carolina, to which physicians from throughout the State were invited.

Deaths

Dr. Joseph Schofield Winters, Bessemer, aged 67, died August 5 of cerebral hemorrhage.

ARKANSAS

The Mississippi County Medical Society met at Blytheville in August for a scientific program, and were entertained by the Blytheville Hospital.

Dr. and Mrs. Frank A. Gray, Batesville, were hosts recently to members of the Independence County Medical Society, entertaining with a boat excursion and supper.

Members of the Jefferson County Medical Society were entertained in August at a banquet given by the Davis Hospital, Pine Bluff.

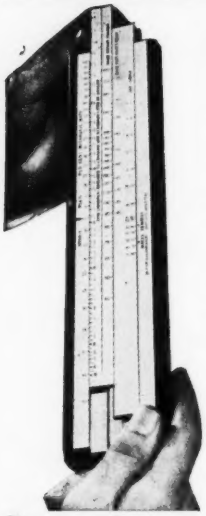
Dr. George F. Jackson was recently elected First Vice-President of the Little Rock Boys' Club, and Dr. W. F. Smith has been elected Director of the Club.

Dr. W. R. Brooksher, Fort Smith, is the newly appointed member of the Publication Committee of the American Radium Society.

The breaking of ground for the new medical school building, Little Rock, was celebrated in July with fitting exercises, this step being the result of thirty years of effort to secure a proper building.

Dr. J. J. Willingham, Fort Smith, directed a tuberculosis clinic at Van Buren in August, and also addressed the Lions Club of that place.

Continued on page 30



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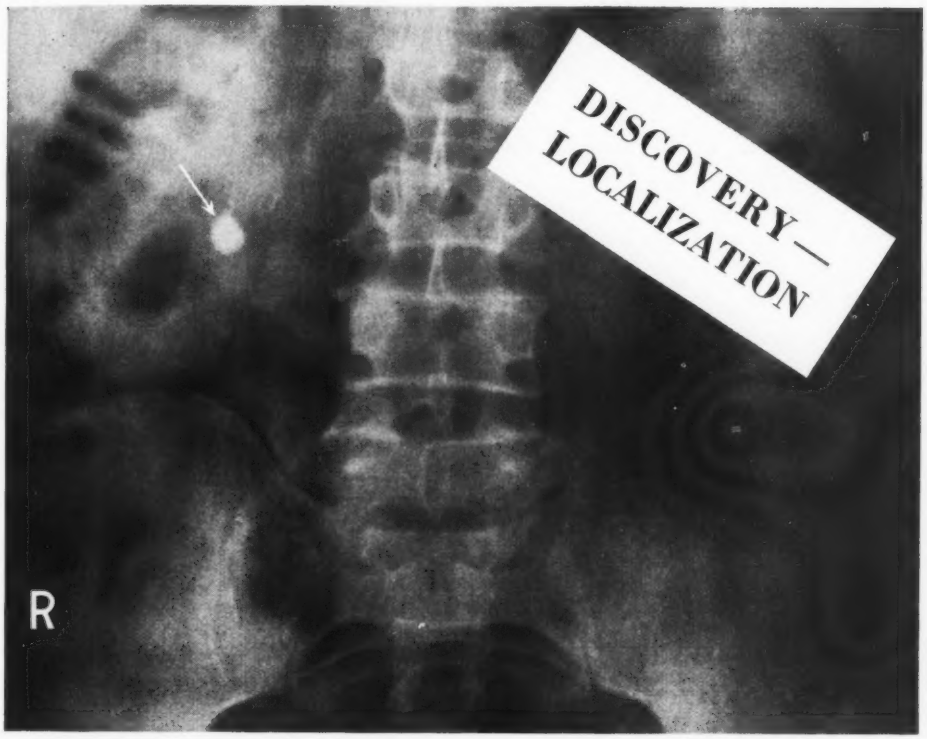

Radiograph showing calculus in right renal pelvis.

THIS case is typical of many commonly encountered in general practice. The complaint was a sharp abdominal pain in the right side—a possible physical symptom of gastro-intestinal disturbance as well as of renal disease.

In such situations, differential diagnosis cannot always be made easily from the clinical findings, so the patient was referred to a radiologist. Radiographs disclosed the presence of a calculus in the pelvis of the right kidney. Thus, an accurate diagnosis was arrived at promptly. Subsequently, accurate localization of the calculus was accomplished with radiographs which were made after a contrast medium was employed.

Radiographs of the renal tract provide invaluable diagnostic information, much of which is obtainable in no other way. Calculi, sarcoma, tuberculosis, renal cysts, ureteral stricture, diverticuli of the urinary bladder, ptosis of the kidneys which often results in ureteral kinking, etc., may be disclosed. Whenever you encounter a case with symptoms suggesting possible renal disorder, refer your patient to a competent radiologist.

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Continued from page 28

Dr. R. R. Kirkpatrick, Texarkana, was elected Commander of the Texarkana Post of the American Legion, and Dr. W. Decker Smith, Texarkana, was elected Executive Committeeman of the Post.

Dr. J. D. Riley, State Sanatorium, and Miss Louise Stevenson were married August 9.

Dr. Laman A. Gray, formerly of Batesville, and son of Dr. and Mrs. Frank A. Gray, and Miss Alice Virginia Crothers were married in June.

DISTRICT OF COLUMBIA

The American Association for the Study of Neoplastic Diseases met in Washington in September and elected the following officers for the coming year: Dr. J. Shelton Horsley, Richmond, Virginia, President; Dr. Charles F. Geschickter, Baltimore, Vice-President; Dr. Janvier W. Lindsay, Washington, Treasurer; and Dr. Eugene R. Whitmore, Washington, Secretary.

Dr. William T. Gill, Jr., Washington, has moved into new offices in the Farragut Medical Building.

Dr. Charles P. Cake has located in Washington with offices at 1726 Eye Street, Northwest, where he will limit his practice to tuberculosis and other diseases of the chest.

Deaths

Dr. Louise Ross, Washington, aged 61, died August 9 of pyelitis.

Dr. William Cline Borden, Washington, Lt.-Col., U. S. Army, retired, aged 76, died August 18.

Dr. William H. Wilson, Washington, aged 51, died June 27.

Dr. James Randall Wilder, Washington, aged 68, died July 7 of chronic duodenal ulcer, stenosis and pulmonary edema.

FLORIDA

Dr. Fletcher Gordon King, St. Augustine, and Miss Evelyn Walters were married recently.

Dr. Taylor Wood Griffin, Quincy, and Miss Helen Ethridge were married in June.

D. Louis Richard Bowen, Eustis, and Miss Myra Sadler were married August 10.

Deaths

Dr. David H. Yates, Madison, aged 68, died June 21 of Raynaud's disease.

Dr. Eugene K. Whidden, Pensacola, aged 45, died July 30 of pellagra.

Dr. William H. Snavely, Tampa, aged 82, died July 26 of cerebral hemorrhage and arteriosclerosis.

Dr. Samuel A. Wright, Hallandale, aged 91, died July 25 of uremia.

GEORGIA

The Georgia Health Officers' Association held its annual meeting in Atlanta in August and elected the following officers for the coming year: Dr. Hugo Robinson, Albany, President; Dr. S. C. Rutland, LaGrange, Vice-President; and Dr. M. E. Winchester, Brunswick, reelected Secretary-Treasurer.

An invitation has been extended to physicians in the Southeastern states, Alabama, Georgia, Florida, Mississippi, Louisiana, Tennessee, North Carolina and South Carolina, who are interested in kidney and bladder diseases, to meet in Atlanta December 7 and 8 for the purpose of organizing a permanent section or unit of the American Urological Association, permission having been granted by the national association to form this branch organization. Temporary officers chosen to function until the election of permanent officers are Dr. Montague L. Boyd, President; Dr. Edgar G. Ballenger, President-Elect; and Dr. Earl Floyd, Secretary-Treasurer; all of Atlanta. Prominent specialists in urology from different parts of the country have been invited to read papers at this organization meeting.

Dr. Stewart R. Roberts, Atlanta, will deliver the Founders' Day Lecture at the Founders' Day celebration of the one hundred and tenth anniversary of the founding of the Medical College

Continued on page 32

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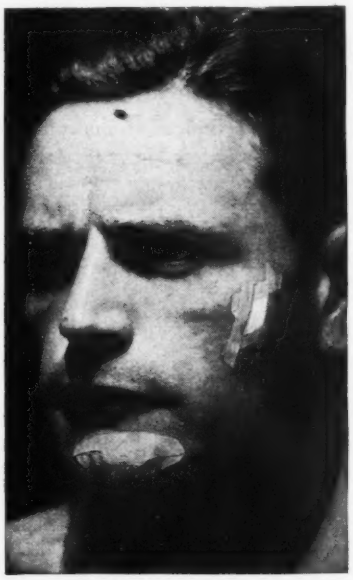

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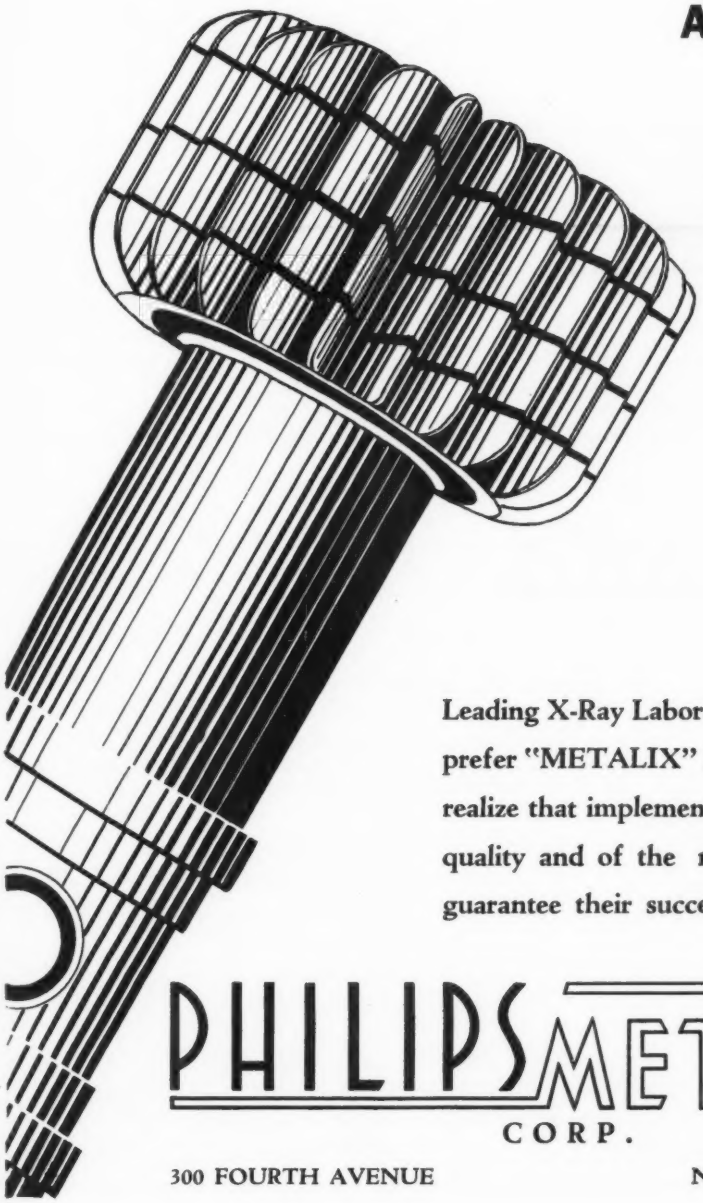

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Continued from page 30

of South Carolina, Charleston, South Carolina, to be held November 8.

The Cherokee County Board of Health and the Cherokee County Medical Society are lending cooperation in the examining for various diseases of people on the rolls of the Federal Emergency Relief Administration. Dr. Grady N. Coker, Canton, has been appointed Physician for the Board, and is assisted in the examinations by four nurses.

Dr. Wayne S. Aiken, Atlanta, has moved into new offices in the First National Bank Building.

Dr. Charles H. Mitchell, Atlanta, has moved into new offices at 35 Fourth Street, Northeast.

Dr. Lovick Wilson Pierce, Brunswick, and Miss Julia Carmichael Bell were married August 6.

Dr. John Richard Shannon Mays, Macon, and Miss Geraldine Barrett were married in June.

Dr. Virgil C. Daves, Vienna, and Miss Henrilea Gross were married in June.

DEATHS

Dr. Augustus H. Brantley, Atlanta, aged 90, died July 20 of heart disease.

Dr. Edward Houston Hice, Rock Springs, aged 66, died August 31 in a Chattanooga hospital.

Dr. Julius B. H. Day, Social Circle, aged 66, died September 7.

Dr. Gordon Flewellen Chambers, Columbus, aged 59, died August 2.

Dr. Fletcher T. Mixon, East Point, aged 79, died August 8.

Dr. Charles F. Bush, Colquitt, aged 46, died August 14.

KENTUCKY

Dr. Fred Rankin, Lexington, recently addressed the regular meeting of the Shreveport, Louisiana, Medical Society.

DEATHS

Dr. Bishop Wash, Carnishville, aged 65, died July 25 of cerebral hemorrhage.

Dr. Lonnie L. Wright, Boaz, aged 53, died suddenly July 16 of heart disease.

Dr. William L. Gaddie, Upton, aged 72, died July 8 of chronic nephritis.

Dr. James Brown Kinnaird, Lancaster, aged 77, died July 24 of arteriosclerosis.

Dr. Gus A. Hardwick, Utica, aged 83, died July 21 of senility.

Dr. G. B. Wheeler, Lexington, died in a Charleston, West Virginia, hospital September 12 following a major operation.

LOUISIANA

The sixth annual meeting of the Central Association of Obstetricians and Gynecologists will be held in New Orleans, November 1-3, at the Roosevelt Hotel. One feature of the meeting will be a joint session with the New Orleans Gynecological and Obstetrical Society. Dr. C. Jeff Miller, Dr. H. W. Kostmayer, and Dr. P. Graffagnino, all of New Orleans, will conduct dry clinics during the meeting.

Assistant Surgeon H. U. Maness, formerly stationed at New Orleans, has been relieved from duty there and assigned to duty at the Relief Station, Washington, D. C.

Dr. Charles James Bloom, New Orleans, on the faculty of the Graduate School of Medicine of Tulane University of Louisiana, gave a series of lectures at the last Southern Pediatric Seminar at Saluda, North Carolina.

The Tri-State Medical Society of Arkansas, Louisiana and Texas held its annual session in Shreveport in October.

Continued on page 34

Dilaudid

(dihydromorphinone hydrochloride)

Council Accepted

In place of Morphine

DOSE:

Oral, subcutaneous and rectal.

For Pain: 1/48 to 1/16 grain
For Cough: 1/64 to 1/32 grain

The dose of Dilaudid is about 1/5 that of morphine, that is, 1/20 gr. Dilaudid is generally equal to 1/4 gr. morphine in analgesic effect.

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For Pain - - In inoperable carcinoma, terminal tuberculosis and other conditions requiring extended analgesia. In renal colic, tabetic crises, and angina pectoris.

For Cough - - For the paroxysms, and for the chronic irritative cough. Small doses, prompt relief.

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℞ *Dilaudid* . . . . . gr. ½
Elix. Terp. Hydrate . ℥ iv.
(or other preferred vehicle)

Sig.: 1 teaspoonful and repeated.

For trial package send your Federal Narcotic Order Form for 1x20 H. T. 1/20 gr. and 1x10 O. T. 1/24 gr. Dilaudid

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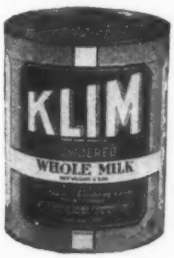
1 tablespoon peanut butter
1 tablespoon water
2 tablespoons KLIM

Blend peanut butter and water to a smooth paste. Add KLIM slowly, stirring to prevent lumps. Spread on bread. Volume: Filling for 1 sandwich. This recipe furnishes ½ cup of milk (84 calories) over normal recipes.



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LOUISVILLE, KENTUCKY

Continued from page 32

The Bi-Parish, East and West Feliciana Parish Medical Society met recently in the East Louisiana State Hospital, where a dinner and scientific program were enjoyed.

DEATHS

Dr. Lawrence Rosboro Craig, Franklin, aged 52, died August 5 in a Hot Springs National Park hospital, following a fracture of the fourth dorsal vertebra.

MARYLAND

Dr. Fielding H. Garrison, Colonel, Medical Corps, U. S. Army (retired), Librarian of the William H. Welch Memorial Library at Johns Hopkins University, Baltimore, addressed the students and faculty of Vanderbilt University School of Medicine on October 18.

Dr. Charles F. Geschickter, Baltimore, was elected Vice-President of the American Association for the Study of Neoplastic Diseases at a meeting of the Association in Washington, D. C., recently.

Dr. Laman Alexander Gray, Baltimore, and Miss Alice Virginia Crothers were married in June.

DEATHS

Dr. Samuel Kemp Merrick, Ruxton, aged 86, died July 24 of heart disease.

Dr. Pinkney Lee Davis, Baltimore, aged 74, died July 9.

Dr. Charles Harris Latimer, Laurel, aged 73, died July 29 of heart disease and arteriosclerosis.

Dr. Grover Cleveland Blake, Cumberland, aged 50, died recently of carcinoma of the stomach.

Dr. James Davidson Iglehart, Baltimore, aged 84, died July 14 of bronchopneumonia.

Dr. Robert Lee Hammond, Frederick, aged 72, died August 10 of chronic nephritis, arteriosclerosis and myocarditis.

MISSISSIPPI

The Harrison-Stone-Hancock Counties Medical Society met at the Veterans' Administration Facilities Hospital in Biloxi recently for a scientific program.

The Issaquena-Sharkey-Warren Counties Medical Society met in August at the Elks Club, Vicksburg, for a supper meeting and scientific program.

Dr. F. G. Riley, Meridian, recently spent some time in Chicago, doing special work in the Children's Clinics of the Children's Memorial Hospital. Dr. Riley also expects to spend some time attending children's clinics in New York and Philadelphia.

Dr. J. S. Whitfield has been appointed meat and milk inspector for the city of Greenwood.

Dr. G. F. Carroll is the newly appointed attending specialist in surgery of the Veterans' Administration Facilities Hospital at Biloxi.

Dr. A. G. Lauder, County Health Officer, has been conducting pre-clinics throughout the County.

Dr. W. B. Lewis, medical missionary to the Belgian Congo, is visiting his family at Pascagoula, and while in this country will take a course in special surgical work at the Mayo Clinic.

Dr. C. J. Pittman, Ruleville, and Mrs. Sue Young were married July 29.

Continued on page 36

FRISCO LINES

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Fast Trains — Air-Conditioned Dining-Lounge Cars — Good Meals

Members of the medical profession and allied organizations attending Southern Medical Association are invited to use the Frisco Lines enroute to and from San Antonio. . . Quickest time available through Birmingham and Memphis from many points in Southeast. . . Through service from a number of cities in West and Southwest. . . Special reduced rates. . . Ask nearest Frisco Ticket Agent or Traffic Representative.

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"The Milk Question"

by M. J. ROSENAU, Professor of Preventive Medicine and Hygiene, Harvard Medical School.

"Man has but a single stomach and this forms about twenty per cent of the digestive tract. The cow has four stomachs which form about seventy percent of the digestive tract. The calf's stomach is well fitted to handle and digest the tough, lumpy curds which form from cow's milk. Woman's milk curdles into a soft mass which is broken into numberless small particles. Evidently the stomach of the infant fed with cow's milk is over-taxed trying to break the tough curds into particles small enough for complete digestion. It is therefore evident that even if we could secure cow's milk, the chemical composition of which was exactly the same as that of human milk, it would still be far from a perfect substitute unless it behaved similarly in the digestive tract."

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SIMILAC *is made from fresh skim milk (casein modified) with added lactose, salts, milk fat, and vegetable and cod liver oils.*

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Cambridge, Mass. Cincinnati, Ohio Detroit, Mich.
St. Louis, Mo. St. Paul, Minn.
Dallas, Texas

Continued from page 34

DEATHS

Dr. William Gwin Kiger, Brunswick, aged 88, died July 19.

Dr. E. P. Odeneal, Gulfport, aged 62, died recently in a New Orleans hospital.

MISSOURI

Dr. F. M. Grogan, St. Joseph, is the newly appointed Superintendent of the St. Louis Sanitarium, succeeding Dr. George A. Johns.

The Reverend Father Alphonse M. Schwitalla, S.J., St. Louis, Dean of the St. Louis University School of Medicine, is attending, as a member of the Committee, an organization meeting of a planning committee for the purpose of inspection and reappraisal of medical schools, this Committee being organized under the auspices of the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association.

The St. Louis Metropolitan Health Council is sponsoring a survey of all patients in St. Louis City and St. Louis County who were victims of encephalitis to determine the after effects of encephalitis. It is expected that this survey will take about three months to complete, and will be repeated again a year later.

Work on the Homer G. Phillips Negro Hospital at St. Louis has been resumed and it is expected that the five units will be completed by the fall of 1935.

Dr. Irl B. Krause, Jefferson City, is the newly elected President of the Missouri Tuberculosis Association.

Dr. Hariet S. Cory, St. Louis, is the newly appointed executive secretary of the Missouri Social Hygiene Association.

Dr. Malvern Bryan Clopton, St. Louis, and Mrs. Rachel Lowe Lambert were married in July.

DEATHS

Dr. Ralph Waldo Holbrook, Kansas City, aged 54, died August 22 of heat prostration.

Dr. Frank Sherman Alexander, St. Louis, aged 66, died July 28 of heat prostration.

Dr. James Robert Hunt, Macon, aged 60, died July 25 of heat prostration.

Dr. Charles W. Wyman, Kansas City, aged 56, died July 21 of heat prostration.

Dr. Malcolm A. Bliss, St. Louis, aged 71, died September 4 of coronary sclerosis.

Dr. Herbert Arthur Rhoades, Foster, aged 65, died August 3 of uremia and chronic nephritis.

Dr. William LaFayette Gossage, Kennett, aged 67, died July 9 of pulmonary tuberculosis.

Dr. Levi Samuel Long, St. Joseph, aged 62, died August 10 of cerebral hemorrhage.

Dr. John Joseph De Vereaux, Warrenton, aged 53, died August 18 of coronary occlusion.

Dr. L. William Ray, St. Louis, aged 64, died July 23 of heat prostration.

Dr. Frank Hinchey, St. Louis, aged 66, died August 9 of heart disease.

Dr. Bennett Clark Hyde, Lexington, aged 62, died suddenly August 7 of cerebral hemorrhage.

Dr. John Dawson Prowell, Sedalia, aged 71, died June 20 of complications resulting from two operations.

Dr. Robert Hill Davis, St. Louis, aged 59, died June 19.

Continued on page 38

Classified Advertisements

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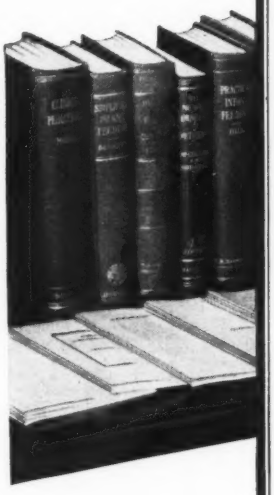

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Southern Railway System

Continued from page 36

NORTH CAROLINA

The following North Carolina physicians were on the program of the Southern Tuberculosis Conference and Southern Sanatorium Association, which met in Knoxville, Tennessee, in October: Dr. Julian Moore, Asheville; Dr. David T. Smith, Duke University, Durham; Dr. Joseph B. Greene, Asheville; Dr. P. P. McCain, State Sanatorium; and Dr. L. B. McBrayer, Southern Pines.

The Seaboard Medical Association of Virginia and North Carolina will meet at Kinston December 4, 5 and 6, with Dr. Paul F. Whitaker, Kinston, President, presiding.

The University of North Carolina Medical School, Wake Forest, announces two additions to the teaching staff: Dr. A. S. Rose, Associate Professor of Anatomy, formerly connected with the Harvard Medical School; and Dr. W. Reece Berryhill, Associate Professor of Pathology and Physical Diagnosis, formerly connected with Western Reserve University, Cleveland, Ohio.

Dr. Claude E. Simons has located at Wilson to practice general medicine.

A Postgraduate Course in Fractures was held at Duke Hospital, Durham, in October.

Dr. George C. Mackie, Professor of Physiology, University of North Carolina Medical School, Wake Forest, and Miss Kathleen Robinson were married August 24.

Dr. Herschel Clanton Lennon, Wilmington, and Miss Myrtle Catherine Hendley were married June 16.

Dr. Charles Duffy, New Bern, and Miss Mary Pickett Breck were married recently.

Dr. Royal Mann Calder and Miss Laurie May Booth, both of Durham, were married August 18.

Dr. John Henry Dougherty and Miss Florence Mabee Boone, both of Asheville, were married July 28.

DEATHS

Dr. James Spencer Brown, Pinehurst, aged 71, died August 18 of pneumonia.

Dr. Goode Cheatham, Henderson, aged 59, died suddenly August 3 of coronary thrombosis.

Dr. Charles E. Wilkerson, Greensboro, aged 55, died July 13.

Dr. Alto Freed Mahoney, Monroe, aged 47, died August 29 in a Charlotte hospital of pernicious anemia.

Dr. Samuel S. Coe, High Point, aged 53, died August 6 of complications following an operation for appendicitis.

Dr. Samuel Edward Teague, Hamlet, aged 37, died August 10 of osteomyelitis.

Dr. John W. Rodwell, Mocksville, aged 68, died August 12 in a Charlotte hospital of nephritis.

OKLAHOMA

The Oklahoma City Clinical Society met in Oklahoma City the last of October with headquarters at the Biltmore Hotel for their fifth annual fall conference.

DEATHS

Dr. Richard Alexander Feild, Enid, aged 80, died August 14 of pulmonary edema following cerebral hemorrhage.

SOUTH CAROLINA

The Medical College of South Carolina, Charleston, will celebrate Founders' Day on November 8, marking the one hundred and tenth anniversay of the establishing of the College. A program of clinics will be held during the day, with a banquet in the eveing, at which Dr. Stewart R. Roberts, Atlanta, will make the principal address.

Dr. Julius Cleon Josey and Miss Mary Helen Lancaster, both of Spartanburg, were married in June.

Dr. William McNeill Carpenter and Miss Nena Martin McSwain, both of Greenville, were married in July.

Dr. Homer Melton Eargle, Orangeburg, and Miss Claribel Croswell Parham were married in July.

Dr. William A. Carrigan, Beaufort, and Miss Beulah Womack were married in July.

DEATHS

Dr. Thomas G. Cooksey, Converse, aged 68, died July 17 in a Spartanburg hospital.

Dr. Dudley H. Smith, Florence, aged 55, died July 28 of cerebral hemorrhage.

Dr. Oscar La Borde, Columbia, aged 55, died July 31 of chronic myocarditis.

Continued on page 40

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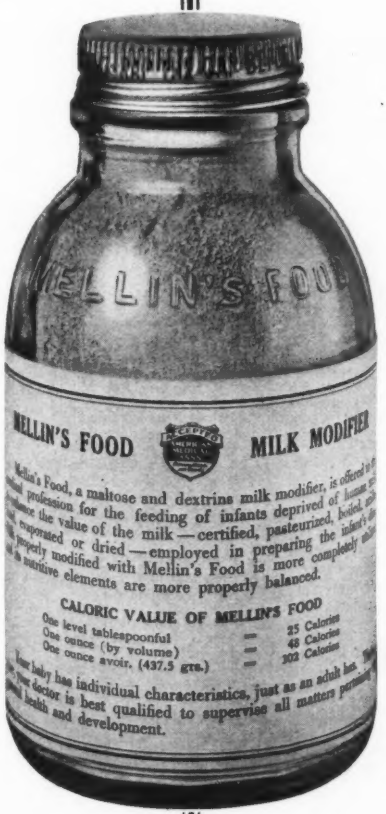
Produced by an infusion of Wheat Flour, Wheat Bran and Malted Barley admixed with Potassium Bicarbonate—consisting essentially of Maltose, Dextrins, Proteins and Mineral Salts.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One level tablespoonful = 25 Calories
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58.9% maltose and 20.7% dextrins.

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10.3% protein extracted from wheat flour, malted barley and wheat bran, the grains employed in the making of Mellin's Food.

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3.9% ash derived from these grains and from the potassium bicarbonate added during the process of manufacture.

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It has been favorably known the world over for more than half a century, and its use is consistent with today's sound pediatric knowledge and practice.

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Address .....

Continued from page 38

TENNESSEE

The Southern Tuberculosis Conference and the Southern Sanatorium Association met in Knoxville in October, with headquarters at the Andrew Johnson Hotel.

The Radiological Society of North America will meet in Memphis in December for its annual session, with headquarters at the Peabody Hotel.

The Gibson County Medical Society held its annual medical society barbecue in August, followed by a scientific program.

Dr. T. E. Rice has located in Franklin, where he has opened offices to practice.

Dr. Gilbert Eblen, formerly of Lenoir City, has recently completed some postgraduate work at the Chicago Children's Memorial Hospital, and has become associated with Dr. Oliver W. Hill in Knoxville. Dr. Eblen has sold his equipment and practice to Dr. Walter D. Berry, formerly of East Longmeadow, Massachusetts.

Deaths

Dr. Charles Victor Roman, Nashville, aged 70, died August 25 of cerebral hemorrhage.

Dr. John B. Bond, Martin, aged 60, died September 2 of heart disease.

Dr. James Peyton Curlee, Woodbury, aged 75, died August 15 of chronic nephritis.

Dr. Hyram G. Brooks, Elkhorn, aged 75, died July 20.

Dr. Matthew Blair St. John, Bristol, aged 55, died August 19 of acute dilatation of the heart.

Dr. George Higginson, Nashville, aged 69, died August 15 of pulmonary abscess and Parkinson's disease.

Dr. H. W. Sale, Covington, aged 61, died August 30.

TEXAS

The Postgraduate Medical Assembly of South Texas met in Houston at the Rice Hotel early in October.

The Bryant Clinic and Hospital at Tyler was recently completed and formally opened for occupancy.

The Texas Public Health Association met in Abilene early in October for its annual session, with Dr. T. J. McCamant, El Paso, President, presiding.

The Livingston Hospital at Livingston, operated by Dr. W. W. Flowers and Dr. J. H. Dameron, was opened to receive patients recently.

Dr. J. F. Crumley has moved from Marshall to Shreveport, Louisiana.

Dr. J. M. Fewks has moved from Livingston to Onalaska.

Dr. T. A. Guillory has moved from Call to Silsbee.

Dr. Herman Klapproth has moved from Galveston to Halstead, Kansas.

Dr. E. L. Spence has moved from Plainview to Kennett, Missouri.

Dr. D. D. Stoner has moved from Flatonia to York Springs, Pennsylvania.

Dr. E. A. Chandler has moved from Bayton to Houston.

Dr. J. H. Dameron, formerly of Silsbee, has recently located at Livingston.

Dr. Robert L. Hall has moved from Wichita Falls to Italy.

Dr. J. S. McCreary has moved from Buffalo to Shamrock.

Dr. W. R. Swanson has moved from Hutto to Taylor.

Dr. Carl C. Carrico, Houston, and Miss Helen M. Murphy were married August 4.

Dr. Clifford Hogan Stripling and Miss Louise Bennett, both of Jacksonville, were married in July.

Dr. Lloyd M. Southwick and Miss Ruth Tarpley, both of Edinburg, were married September 1.

Dr. Lovett Martin Reaves, Dallas, and Miss Allan Wells were married in July.

Deaths

Dr. Robert H. Harrison, Houston, aged 73, died July 14 of myocarditis and angina pectoris.

Dr. George Tucker Spencer, Dallas, aged 43, died August 6 of heart disease.

Dr. George Myers Godfrey, San Antonio, aged 64, died June 26 of pulmonary tuberculosis and nephritis.

Dr. Allen T. Hays, Vernon, aged 86, died in August of a skull fracture sustained in a fall.

Dr. Frederick Gustave Eidman, Sr., Houston, aged 59, died August 4 of chronic nephritis.

Dr. James Enos Butler, Dallas, aged 77, died August 8 of coronary disease and arteriosclerosis.

Dr. Merchant William Colgin, Waco, aged 51, died July 15.

Continued on page 42

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CAROTENE WITH VITAMIN D CONCENTRATE IN OIL

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For patients who object to the taste of the fish liver oils.

Smaco Carotene-with-Vitamin-D-Concentrate-in-Oil supplies both vitamin A and D effect in SMALL BULK and PALATABLE FORM.

This product combines the advantages of Smaco Carotene (Pro-Vitamin A), with Vitamin D concentrate prepared for therapeutic use by a process developed in the laboratories of and controlled by Columbia University. Biological potency not less than 7500 new U.S.P. units of vitamin A and not less than 1000 new U.S.P. units of vitamin D per gram (U.S.P. X—1934 Revision).

ACCEPTED AMERICAN MEDICAL ASSN.

S.M.A. CORPORATION • CLEVELAND, OHIO

Continued from page 40

Dr. William L. Higginbotham, Sherman, aged 77, died July 13 of heart disease.

Dr. Jefferson Woolsey, Karnes City, aged 64, died July 26 of cerebral hemorrhage.

Dr. W. W. Shoemaker, Handley, aged 77, died July 26 in a Fort Worth hospital.

Dr. A. P. Baldwin, Tyler, aged 72, died July 10.

Dr. James E. G. Simmons, Boyd, aged 75, died July 26.

VIRGINIA

Dr. Fred M. Hodges, Richmond, was elected President of the American Roentgen Ray Society at its annual meeting the latter part of September.

Dr. M. Pierce Rucker, Richmond, President-Elect, succeeded Dr. William Wayne Babcock, Philadelphia, to the Presidency of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at the recent annual meeting of the Association at White Sulphur Springs, West Virginia.

Dr. J. Shelton Horsley, Richmond, is the newly elected President of the American Assocation for the Study of Neoplastic Diseases, having been elected at the meeting of the Association in Washington, D. C., in September.

The Fairfax County Medical Society has elected the following officers for the coming year: Dr. Jessie M. T. Scott, Vienna, President; Dr. E. C. Shull, Herndon, and Dr. B. F. Phillips, Quantico, Vice-Presidents; Dr. E. S. Waring, Fairfax, Secretary; and Dr. F. M. Brooks, Fairfax Station, Treasurer.

The Physicians' Journal Club of the Eastern Shore of Virginia met at Drummondtown Tavern, Accomac, in September and elected the following officers for the coming year: Dr. J. F. Edmonds, Accomac, President; Dr. W. Carey Henderson, Nassawadox, Vice-President; and Dr. John Roberts, Onancock, Secretary.

The Southside Virginia Medical Association held a meeting at the Piedmont Sanatorium, Burkeville, recently.

The Virginia Pediatric Society met in Alexandria in October for its annual luncheon meeting, with Dr. T. D. Jones, Richmond, President, presiding.

The following physicians have been elected members of the Board of Trustees of the Northampton-Accomac Memorial Hospital: Dr. Rooker J. White, Keller; Dr. J. L. DeCormis, Accomac; and Dr. W. J. Sturgis, Nassawadox.

Dr. Samuel H. Mirmelstein, formerly of Akron, Ohio, has located at Newport News for general practice.

Dr. Frank D. Daniel has located at Charlottesville and become associated with his father, Dr. T. H. Daniel, to practice medicine.

Dr. Paul B. Barringer, University, is sponsoring a movement in honor of Dr. Walter Reed to have a marker erected on the home at the University of Virginia where Dr. Reed lived while a student at the University.

Dr. John E. Gardner, Roanoke, was at Harvard University during September, taking postgraduate work in cardiology.

Dr. E. Trible Gatewood, Richmond, has been attending the Haslinger Bronchoscopic Clinic in Vienna.

Dr. H. Cantor, Petersburg, recently attended the seventh annual graduate fortnight of the New York Academy of Medicine on diseases of the gastro-intestinal tract.

Dr. Andrew Muncy Groseclose, Roanoke, and Miss Mary Katherine McLaughlin were married in July.

Dr. Raymond L. Claterbaugh and Miss Louise H. Scruggs, both of Clifton Forge, were married September 8.

Dr. Oscar Lee Hite, Richmond, and Miss Inez DeJarnett were married September 22.

DEATHS

Dr. Benjamin Blake Dutton, Hartfield, aged 83, died suddenly July 6 of heart disease.

Dr. John Langhorne Moore, Richmond, aged 71, died September 8.

Dr. Henry Watkins Anderson, Covington, aged 78, died September 4 of heart disease.

WEST VIRGINIA

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons met in White Sulphur Springs in September for their forty-seventh annual session, with headquarters at the Greenbrier Hotel.

Dr. Linville Murrell Halloran, Beckley, and Miss Frances Louise Williams were married August 31.

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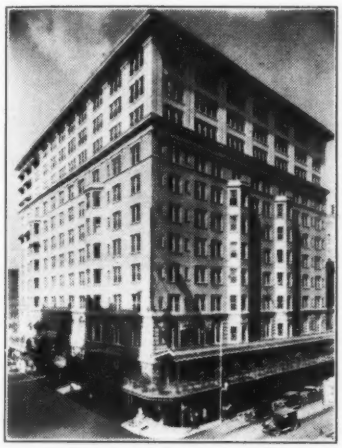

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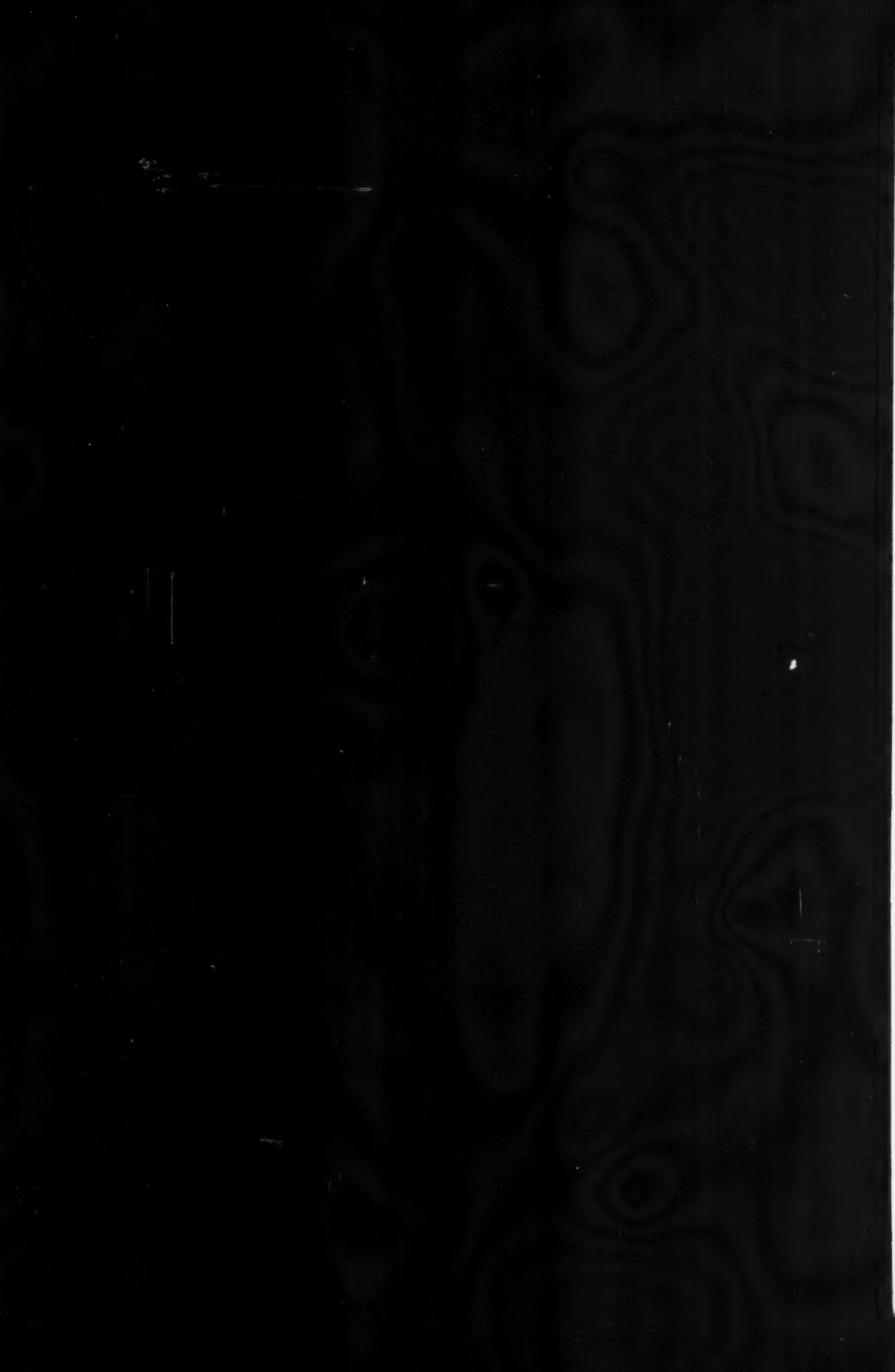

Relative Values of Carbohydrates Employed in Infant Feeding

Continued down from 1911

1916

"For the addition of sugar, I usually use dextri-maltose, which does not easily cause fermentation."—*L. L. Meininger: Use of Eiweissmilch, Arch. Pediat., 33:529-532, July, 1916.*

1916

In the treatment of marasmus, "Three per cent of malt sugar should be administered from the first, afterwards running up to as high a per cent as the child will take."—*L. T. Royster: A Handbook of Infant Feeding, C. V. Mosby Co., St. Louis, 1916, p. 100.*

1916

"Least irritating of all sugars, and more readily digested and quickly absorbed, is maltose."—*H. Lowenburg: A Practical Treatise on Infant Feeding and Allied Topics, F. A. Davis Co., Phila., 1916, p. 73.*

1916

"Dextrin-maltose is valuable in cases where intestinal disturbances are due to fermentation of milk sugar."

"Treatment (of sugar intoxication) consists in eliminating the latter (whey salts) as well as the sugars from the diet temporarily, and when the symptoms have subsided, a different sugar in proper proportion should be cautiously added; maltose and dextrin are preferable, because they are not apt to produce fermentation, while milk sugar is prone to set up fever and diarrhea."—*E. E. Graham: Diseases of Children, Lea & Febiger, Phila., 1916, pp. 179-201.*

1917

"For children who are not gaining on a normal formula with a sufficient amount of sugar of milk, or children who vomit when sugar of milk is fed, or who are constipated, the use of maltose instead of lactose often gives most satisfactory results. This is readily accomplished by substituting for the 4 or 5 per cent. of added sugar of milk an equal amount of dextri-maltose or malted milk, which latter gives, in addition to the maltose, some protein food and an insignificant amount of fat. In many cases children who have failed to gain on other food will immediately show a marked gain as soon as this change is made."—*R. G. Freeman: Elements of Pediatrics. Macmillan Co., New York, 1917, pp. 191 and 192.*

1917

"The carbohydrates most used in infant feeding are the three soluble sugars and starch. The three soluble sugars are lactose, or milk sugar, maltose, or malt sugar, and saccharose, or cane sugar. Maltose is not used in its pure form, on account of its cost. The various commercial preparations of maltose are combinations of maltose with various dextrins, but as in digestion dextrin is converted into maltose, the chemistry is practically the same."

"The sugar which is not absorbed is broken down by the bacteria of the intestine into a great variety of fermentation products, among them being lactic, butyric, acetic, and succinic acids."

"Another effect of the excessive fermentation which results from a relative excess of carbohydrate in the food, is the formation of an excessive amount of gas. This may cause abdominal distention, and, extending backward, it may carry irritating acid products into the stomach, and thus cause vomiting."

"Lactose is the sugar most likely to produce acute symptoms. The stools are practically always green and very irritating. Flatulence and colic are less prominent."

"The maltose-dextrin preparations rarely produce acute exacerbations."—*C. H. Dunn: The Hygienic and Medical Treatment of Children, Southworth Co., Troy, New York, 1917, pp. 423, 424, 425, 428.*

1918

"The sugars in the foods are milk sugar which is found in mother's milk as well as in cow's milk, cane sugar and malt sugar. Though milk sugar is a natural ingredient of milk it is not well borne by babies when added to their food; they digest cane sugar, the ordinary granulated sugar, much better; malt sugar is the easiest digested by babies."—*C. G. Leo-Wolf: Nursing in Diseases of Children, C. V. Mosby Co., St. Louis, 1918, p. 24.*

1918

"Maltose (malt sugar) has the advantage of being very easily digested; when part of the sugar given is maltose, many children gain more rapidly in weight than when only milk sugar or cane sugar is used."—*L. E. Holt: The Care and Feeding of Children, D. Appleton & Co., New York, 1918, p. 66.*

1919

"In the administration of protein milk with its large protein content, by adding to it sugar which is not easily fermented (dextri-maltose), we produce, instead of pathologic fermentation, a condition of putrefaction which changes the acidity of the intestinal contents to alkalinity, the peristalsis is decreased, the intestinal contents pass slowly through the large intestines with absorption of fluid and excretion of calcium and magnesium salts. These minerals unite with fatty acids to form the typical fat-soap-clay-coloured constipated stools characteristic of protein milk feeding, and it is at this point that dextri-maltose should be added to the food."

"The majority of the cases were kept on protein milk for a period varying from three to four weeks, and, in many instances, contrary to the usual opinion, we were able to keep the children on protein milk plus starch and dextri-maltose, sufficient for their caloric needs for a period of several months, in each instance accompanied by a substantial gain in weight and normal increase in vigor and tissue turgor with comparative freedom from digestive symptoms."—*A. Brown and I. F. MacLachlan: Protein milk powder, Canad. M. A. J., 9:528-537, June, 1919.*

1920

"There are three sugars commonly employed in infant feeding: (1) malt sugar or dextri-maltose, (2) cane sugar, and (3) milk sugar. Malt sugar is the most easily digested and assimilated, cane sugar next and sugar of milk the least so."—*L. O. Frech: The caloric method of artificial feeding in normal babies, Illinois M. J. 38:484-488, Dec. 1920.*

1920

Regarding treatment in disturbed metabolic balance in infants, "The one carbohydrate which seems to give the most satisfactory results in these cases is malt sugar."—*C. H. Seybert: Disturbed metabolic balance in infancy, Hahneman, Monthly, pp. 379-382, June, 1920.*

1921

"Next to woman's milk is cow's milk in simple modification with water and sugar in proper proportions and amount according to the age of the child. Milk Sugar is the most expensive and least satisfactory sugar. Dextri-Maltose is the best sugar."—*A. A. Shawkey: Infant foods and infant feeding, West Virginia M. J. 15:284-287, Feb. 1921.*

1921

With reference to hypotrophy, "In mild cases, the addition of dextrimaltose instead of cane or milk sugar may be sufficient to obtain a gain in weight."—*C. Herrman: The treatment of nutritional disorders in artificially fed infants, New York M. J. 114-158-160, Aug. 1921.*

1921

"Maltose and dextrin compounds are acceptable to the infant's digestion in relatively larger quantities. They are not as sweet as cane sugar. They are of practical value when larger amounts of cane sugar are not well borne.

"The so-called 'Mead's Dextri maltose with Potassium Bicarbonate' is laxative, and in the presence of a stationary weight may be given in larger amounts."—*F. W. Fergusson: A method for the modification of cow's milk, Journal-Lancet, 41:628-629, Dec. 1, 1921.*

1921

For cases of fermentative diarrhea, ". . . the ideal plan of treatment would be to give a food which is low in sugar (the food which that group of organisms thrive on) and high in protein. Calcium caseinate milk accomplishes this purpose. In our series of cases, we found it was necessary to use the casein calcium for from 5-8 days; we then stopped it and added dextri-maltose to the formula."—*A. G. DeSanctis and L. V. Paider: The value of calcium caseinate milk in fermentative diarrhea, Arch. Pediat. 38:233-236, April, 1921.*

1922

In the treatment of diarrhea, "The sugar is added gradually as conditions admit, some sugar other than milk sugar or cane sugar being used, preferably dextrin and maltose."—*H. E. Small: Diarrhoea in bottle-fed infants, J. Maine M. A. 12:154-158, Jan. 1922.*

1922

"The use of other soluble carbohydrates other than lactose for milk modifications are very good. Some believe the addition of dextrose or dextri-maltose makes the casein curd softer and easier to digest. This is questioned, but all agree that in cases of malnutrition, where the patient is intolerant to lactose and cannot get the benefit needed from the fat in the diet that the dextri-maltose is invaluable as it is the easiest sugar to digest, and can be immediately used for energy production without undergoing further change."—*E. G. Padfield: Remarks on infant feeding, J. Kansas M. S. 22:97-101, April, 1922.*

Continued down to 1934

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